WILDLIFE REVIEW

OHIO STATE UNIVERSITY
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UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Bureau of Biological Survey

WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
BY THE FISH AND WILDLIFE SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

24938

June 1952 Patuxent Research Refuge, Laurel, Maryland No. 67

The printing of this publication has been approved
by the Director of the Bureau of the Budget, December 15, 1949.

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Except as indicated, abstracts are by William H. Stickel, editor.

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RESULTS OF QUESTIONNAIRE

A gratifyingly large number (nearly 1200) of the questionnaires attached to Wildlife Review no. 66 were returned. Readers voted about 5 to 1 in favor of the 6 x 9-inch size. This size has been adopted, largely for economy. Part of the savings has been used to add covers, which should improve durability. Advantages of the smaller size mentioned by readers are easier filing, especially in pamphlet boxes, and the possibility of clipping entries for pasting on 3 x 5-inch cards.

Clipping should be considered carefully before it is undertaken. A number of readers pointed out that, (1) clipping mutilates the journal and considerably lessens its permanent value; (2) few people maintain a clip-and-past system for more than a short time; (3) pasted cards are bulky and often curved; (4) assignments of most wildlife biologists change frequently enough that it is inadvisable to discard issues after clipping entries on certain topics.

For clipping, it would be desirable to have one side of each sheet blank, but estimates indicate that this would nearly double production costs. The alternative—distribution of two copies to each person wishing to clip—does not seem justifiable. It is better for the available copies to reach more people. Present policy, therefore, will be to issue an extra copy for clipping only to institutions.

A few readers suggested that Wildlife Review adopt the clip-card system of Commercial Fisheries Abstracts. That system has undeniable advantages, but it permits only four entries per sheet. The present issue of Wildlife Review has about 12 entries per sheet, a far less costly arrangement.

Objections to the small page size usually mentioned greater difficulty in reading. This is an important point, but most readers did not consider it critical. Possibly they felt that it is not necessary to read large sections of an abstract journal at a single time. It remains to be seen how much trouble the small print will cause.

CHANGE OF EDITORS

With this issue W. H. Stickel succeeds Neil Hotchkiss as editor of Wildlife Review. The address of the Review remains the same. The former editor returns to long-deferred work in marsh ecology.

NEED FOR BACK ISSUES

Back issues are in steady demand, but there are practically none in stock. All we receive are soon sent out to persons who have requested them. If you have any back issues that you do not need, please let us know and we will send a franked label for their return. Even copies in poor condition are desired.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Bolton, Herbert S. CORONADO ON THE TURQUOISE TRAIL: KNIGHT OF PUEBLOS AND PLAINS. University of New Mexico Press. xvi + 491 p., illus. 1949. $8.00. [Copied from Geographical Review 42(1).]

Garrard, C. William. AN ANNOTATED BIBLIOGRAPHY OF AERIAL PHOTOGRAPHIC APPLICATIONS TO FORESTRY. State University of New York, College of Forestry, Syracuse 10, N. Y. 81 p. 1951. 60¢. [From Journal of Forestry 49(12).]
More than 300 papers are annotated, classified, and cross-indexed.

Shankland, Robert. STEVE MATHER OF THE NATIONAL PARKS. Alfred A. Knopf, N. Y. xxxiv + 326 p., illus. 1951. $4.00. [Copied from Outdoor News Bulletin 6(5).]
Story of the first director of the national parks system. "This book is more than a biography, it is a complete early history of the Park Service and the battles for the preservation of America's scenic and cultural treasures."

WILDLIFE--EDUCATION

Flugger, Annette L. THE ROLE OF CONSERVATION IN THE EDUCATION PROGRAM OF LATIN AMERICA. Pan American Union, Washington, D. C. 1-56 p. Nov. 1951.
History of conservation in the U. S.; condition of natural resources in Latin America; present status of conservation activities in Latin America; objectives of and responsibility for conservation and conservation education; detailed recommendations for conservation education and activities in schools of all types; teaching outlines for classes and field trips; lists of references and other teaching aids.

WILDLIFE--TECHNIQUES

Casey, Robert, and James Perry, editors. PUNCHED CARDS: THEIR APPLICATIONS TO SCIENCE AND INDUSTRY. Reinhold Publishing Corp., N. Y. viii + 506 p., illus. 1951. $10.00. [Copied from American Scientist 40(1).]
Punched cards are finding so many applications in handling research data and indexing complicated filing systems that this "encyclopedic symposium" should be of value in most biological libraries.

WILDLIFE--ECONOMIC AND OTHER VALUES

Stains, Howard J. and Frederick S. Barkalow, Jr. THE VALUE OF NORTH CAROLINA'S GAME AND FISH. North Carolina Wildlife Resources Commission, Raleigh, N. C. 1-33 p., illus. Oct. 1951.
Aesthetic, recreational, and economic values.--Neil Hotchkiss.

Stoddard, Charles H. WILDLIFE ECONOMICS — A NEGLECTED TOOL OF MANAGEMENT. Land Economics 27: 248-249. Aug. 1951. [Copied from Journal of Range Management 5(1).]

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Allee, W. C. COOPERATION AMONG ANIMALS. Henry Schuman, N. Y. 1-233 p., illus. 1951. $3.50.
This thought provoking book is a revised and amplified edition of "The social life of animals." Chapter titles include: Beginnings of cooperation, Aggregations of higher animals, Population size and evolution, Group behavior, Group organization, Social transitions, Some human implications, and The peck order and international relations. The author's main thesis is that a tendency toward cooperation exists in virtually all animals, even the lowest, and that this tendency is at least as important as that for competition. Multitudes of convincing proofs are given. Wildlife biologists will be interested in the numerous examples of the effect of population size on animal function, behavior, and group survival. Experimental evidence is drawn from many groups of vertebrates and invertebrates.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Bullough, W. S. VERTEBRATE SEXUAL CYCLES. John Wiley & Sons. viii + 117 p., illus. 1951. $1.50. [Copied from American Scientist 40(2).]

Hediger, H. WILD ANIMALS IN CAPTIVITY. Academic Press, 125 E. 23rd St., N. Y. ix + 207 p., illus. 1950. $6.00. [Copied from Outdoor News Bulletin 6(10).]

This widely praised book by a noted Swiss zoologist has, according to the review cited above, "...a surprisingly wide application in the study of wildlife management. Since it deals with the behavior and psychology of mammals and birds in enforced proximity to man, its conclusions are applicable to the wild counterparts of zoo animals... This book is unique in its subject matter and will prove of interest to all students of animal behavior. It should prove of practical value to refuge managers, park officials, wildlife photographers, and biologists."

Scholander, P. F., Raymond Hock, Vladimir Walters, and Laurence Irving. ADAPTATION TO COLD IN ARCTIC AND TROPICAL MAMMALS AND BIRDS IN RELATION TO BODY TEMPERATURE, INSULATION, AND BASAL METABOLIC RATE. Biological Bulletin 99(2): 259-271. Oct. 1950. [Technically reviewed in Wilson Bulletin 63(4).]

Scholander, P. F., Raymond Hock, Vladimir Walters, Fred Johnson, and Laurence Irving. HEAT REGULATION IN SOME ARCTIC AND TROPICAL MAMMALS AND BIRDS. Biological Bulletin 99(2): 237-258. Oct. 1950. [Technically reviewed in Wilson Bulletin 63(4).]

Scholander, P. F., Vladimir Walters, Raymond Hock, and Laurence Irving. BODY INSULATION OF SOME ARCTIC AND TROPICAL MAMMALS AND BIRDS. Biological Bulletin 99(2): 225-236. Oct. 1950. [Technically reviewed in Wilson Bulletin 63(4).]

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Beaufort, L. F. de. ZOOGEOGRAPHY OF THE LAND AND INLAND WATERS. Textbooks of Animal Biology, Sidgwick and Jackson, London. viii + 208 p., illus. 1951. 30s. [Copied from Journal of Animal Ecology 20(2).]

According to the review by T. T. Macan cited above, this volume of 184 text pages takes up the various regions of the world, describes their climates, and discusses their faunal relationships as explained by their ecology and geological history. Relatively small numbers of animals are used as examples. The reviewer apparently feels that the book is an adequate text but is far from being an encyclopedic reference. There is a bibliography of 132 titles, and 10 text figures, all but one of them maps.

Behre, Ellinor H. ANNOTATED LIST OF THE FAUNA OF THE GRAND ISLE REGION, 1928-1946. Louisiana State University, Occasional Papers of the Marine Laboratory, no. 6: 1-66. Oct. 1950.

Records of many kinds of plants, invertebrates, and fishes from a Louisiana coastal island. The species are chiefly marine or terrestrial. 10 species of mammals are listed, but amphibians and birds are not treated. A few reptiles are mentioned.

Thomas, Edward S. DISTRIBUTION OF OHIO ANIMALS. Ohio Journal of Science 51(4): 153-167, illus. July 1951.

A stimulating discussion of the ranges of certain animals (chiefly amphibians, reptiles, and insects, with mention of some birds and mammals) as correlated with postglacial conditions. The author believes that many species persisted near the ice margin during glaciation and soon spread northward. Others invaded from the west during the prairie peninsula period, while still others spread into specialized habitats from the Atlantic Coast. Clearing of forests has generally favored southern and western species. 14 maps.

WILDLIFE--NUMBERS AND NUMBER FLUCTUATIONS

Dustman, Eugene H. A PRE-HUNTING SEASON WILDLIFE SURVEY IN NORTHWESTERN OHIO, AUGUST 1951. Ohio Wildlife Research Unit Release 207: 1-12. 1951?
Number of pheasants seen; pheasant population characteristics (ages and number of broods); numbers seen, 1946-1951, of cottontail, bobwhite, dove Hungarian partridge, fox squirrel, hawks, crow, woodchuck; highway mortality observed for 8 species, 1946-1951.

Kalela, Olavi. ON SECULAR RHYTHM IN THE DISTRIBUTIONAL DYNAMICS OF SOME EUROPEAN BIRDS AND MAMMALS AND ITS RELATION TO WINTER CONDITIONS. (Zur säkularen rhythmik der arealveränderungen Europäischer vögel und säugetiere, mit besonderer berücksichtigung der überwinterungverhältnisse als kausalfaktor). Ornis Fennica 27(1): 1-30, illus. 1950.
Has 2-page English summary and good bibliography. Many resident birds and mammals and some partially migrant birds of Northern and Central Europe have extended their ranges northward since the middle of the last century. Many of these animals die in northern areas during hard winters. Their northward spread is attributed to increasing mildness of the winters for over 100 years. Fluctuations of winter severity for several hundred years are shown in graphs.

Leslie, P. H. and Dennis Chitty. THE ESTIMATION OF POPULATION PARAMETERS FROM DATA OBTAINED BY MEANS OF THE CAPTURE-RECAPTURE METHOD. I. THE MAXIMUM LIKELIHOOD EQUATIONS FOR ESTIMATING THE DEATH-RATE. Biometrika 38(3 and 4): 269-292. Dec. 1951.
"The problem considered in this paper is that of estimating the death-rate in a population which is continuously changing in numbers, from the results of a chain of successive samples at each of which a number of individuals are captured, marked and returned to the population (the capture-recapture method)." A heavily statistical study on a topic of theoretical and practical importance.

Rowan, W. CANADA'S PREMIER PROBLEM OF ANIMAL CONSERVATION. Penguin Books, England. New Biology no. 9: 38-57, illus. Oct. 1950.
The author describes the 9.6-year cycle and discusses possible explanations for it. Length of cycle is nearly exact in any one locality, and many animals are affected, including hares, lynxes, sharp-tail grouse, Hungarian partridge, pheasant, various resident passerines, ptarmigan, fisher, muskrat, salmon, and grasshopper. At peaks, animal life is present in swarms; at lows, scarcely an animal can be found. Upon analysis, weather and numbers do not seem to be primary controlling factors. Fluctuations in ultra-violet radiation appear to correlate with the animal cycle. Atmospheric ozone also seems to vary over 10-year periods, and as it is a powerful absorber of ultra-violet it may cause the ultra-violet cycle. The author suspects that this, or as yet undetermined factors of analogous nature, govern the cycle by means of nutrition. Experimental work is underway.

Schaefer, Milner B. ESTIMATION OF SIZE OF ANIMAL POPULATIONS BY MARKING EXPERIMENTS. U. S. Fish and Wildlife Service, Fishery Bulletin 52(69): 189-203, illus. 1951. 15¢.
Statistical estimation of animal numbers is an important part of numerous field studies, and casual procedures are no longer tolerable. The author discusses the relative merits of the contributions and formulas of many workers. Sampling errors are considered. Methods are proposed for handling data from repeated sampling of a constant population, and for estimation of a changing population. Examples are drawn from fisheries work, but the methods have general application. The bibliography includes some of the important papers on methods of estimating populations.

WILDLIFE--NUMBERS AND NUMBER FLUCTUATIONS--Continued

Siivonen, Lauri, and Airi Väänänen. GAME POPULATIONS IN FINLAND AFTER THE 1950/51 HUNTING SEASON (Riista esiintyminen metsästyskauden 1950/51 päättyessä). Suomen Riista 6: 166-169, 195-196, illus. 1951 (1952).

With English summary. Maps show distribution and relative abundance of 27 kinds of game, furbearers, or predators. A table gives the relative abundance in different districts. Another table gives national averages back to 1934. Abundance in 1950/51 was about a third to a fourth of the abundance during the peak years of the 1940's. The bearing of these figures on Siivonen's previous papers on game fluctuations is discussed.

Williams, Jay. THE FALL OF THE SPARROW. Oxford University Press. 154 p., illus. 1951. $3.00. [Copied from review by Neill Phillips in Atlantic Naturalist 7(3).]

"...man's sorry record of extinguishing animal species, and backward and inconvenient human tribes.....For every species that has become extinct in Christian times, about six are at present seriously threatened." Written entertainingly, with irony and satire pointing up the grim story.

WILDLIFE--PARASITES AND DISEASES

Lapage, Geoffrey. PARASITIC ANIMALS. Cambridge University Press. xxi + 351, illus. 1951. $4.00. [Copied from American Scientist 40(2).]

An outline of the general principles that govern the lives of parasitic animals. Tells how parasitic animals penetrate the host and live within it, taking up life histories and the effect of parasitism on parasites. Host immunity and tissue reactions are considered. Economic effects of parasites are stressed. Many photographs and drawings.

Muroma, Eero. A LIST OF PARASITES AND DISEASES OF THE MOST IMPORTANT GAME ANIMALS IN FINLAND (Suomen tärkeimpien riistaeläinten loiset ja taudit tähän mannessä suoritettujen tutkimusten mukaan). Suomen Riista 6: 159-162, 194-195. 1951 (1952).

With English summary. "Only those diseases are listed in which a minimum of 15 cases in mammals or 20 cases in birds has been investigated...Column A gives the total sum of specimens studied, as well as the number of parasitized and diseased cases."

Muroma, Eero. THE MOST IMPORTANT GAME DISEASES IN FINLAND (Tärkeimmät riistantautimme). Suomen Riista 6: 111-127, 190-191, illus. 1951 (1952).

With English summary. Discusses all diseases known in Finland to affect squirrel, snow hare, red fox, moose, field hare, blackgame, capercaillie, and hazel grouse. Coccidiosis is the most important protozoan disease. It is found in both birds and mammals. Several parasitic worms are also important. Virus and bacterial diseases of wildlife have been little studied in Finland, but data are given on several of them.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Brown, A. W. A. INSECT CONTROL BY CHEMICALS. John Wiley & Sons, N. Y. vii + 817 p., illus. 1951. $12.50.

This thorough, technical, encyclopedic reference has been reviewed by J. P. Linduska [J. Wildl. Mgt. 16(1)] and R. B. Friend [Amer. Scientist 40(1)]. The author devotes a chapter to the relation of insecticides to animal populations, and points out that these poisons must be used with due regard for wildlife. "Thus the weapon must be used as a stilleto rather than a scythe." Linduska states that the book is unique for its thorough consideration of the molecular structure of organic chemicals in relation to their toxicity to insects. Chapter titles are: Insecticides of the Mid-Twentieth Century and their properties. The structure of organic chemicals and their toxicity to insects. Susceptibility of insects to the entry of poisons. The pharmacology of poisons for insects. Equipment developed for the application of insecticides. The application of insecticides from aircraft. Toxicity and hazards to man and domestic

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.--Continued

animals. Toxicity of insecticides to plant growth. Chemical control of insects feeding on plants. Chemical control of insects affecting man and animals. Insecticides and the balance of animal populations.

Knedell, Charles. SPRAYING AND WILDLIFE. North Dakota Outdoors 14(6): 12-13, 15, illus. Dec. 1951.

Aldrin was applied to marsh areas from air at rate of 2 ounces per acre. Toxaphene was similarly applied at rate of 1½ pounds per acre. Some coots and ducks were killed, including at least 37.5% of the young ducks on one marsh. "In conclusion, it is quite probable that the application of Aldrin as an insecticide has a toxic effect upon young and adult waterfowl as indicated by the results of the experiments. Aldrin was found to be more toxic than Toxaphene. Since no immediate effect was observed, mortality may have been caused by the presence of the poison in the water or in the aquatic vegetation upon which the ducks and coots feed.....Small fish and amphibian life was not affected. No harmful effect was observed upon breeding bird populations or nesting activity."

Schultz, Vincent. GAME MORTALITY RESULTING FROM A SEVERE SNOW AND ICE STORM IN TENNESSEE. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 22-24, 1951. 1-23 p., illus.

Data on winter kill by the storm were gathered in connection with an interview-game-survey. It is estimated that 16,764 quail, 20,737 rabbits and 84,884 doves were killed, but the true numbers may have been several times as great. Population effects could not be determined. Much information is given on the survey methods.

Springer, Paul F., and John R. Webster. BIOLOGICAL EFFECTS OF DDT APPLICATIONS ON TIDAL SALT MARSHES. Mosquito News 2(2): 67-74. June 1951.

Studies were conducted in New Jersey for 2 years. Four plots were treated at dosages from 0.2 to 1.6 lbs. DDT per acre. Birds, snails, mussels and red mites suffered little or none at any dosage. Complete kills of blue crabs and heavy kills of killifish resulted at 0.8 and 1.6 lb. levels. Amphipods, sow bugs, and bait shrimp, as well as certain insects and spiders, incurred heavy losses at all dosages. Other insects and spiders, and clam worms, were more resistant. Blue crab populations were reduced by dosages below 0.8 lbs. Fiddler crabs were also highly susceptible.--R. T. Mitchell

Webster, R. L. NEW INSECTICIDES: THEIR USE, LIMITATIONS AND HAZARD TO HUMAN HEALTH. State College of Washington, Pullman, Institute of Agricultural Sciences, Stations Circular no. 64 (4th Revision): iii + 67. 1951.

Discusses 28 new insecticides in varying detail, bringing together much scattered information from many sources. For the better known chemicals information is given on such topics as effect on warm blooded animals, effect on honey bees, accumulation in soil, effect on soil organisms, and residue considerations. The various trade names and preparations of the chemicals are given, as well as much information on toxicity.

WILDLIFE--MANAGEMENT--GENERAL

Holder, T. H. LAND ACQUISITION IN THE SOUTHEAST. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-11 p.

The author discusses state-owned wildlife lands in the Southeast, and gives extent, cost, and type of game of several areas. He discusses the pros and cons of state purchase of wildlife areas, and concludes that the advantages far outweigh the disadvantages. Habitat destruction is proceeding so rapidly that only purchase will save many areas. Waterfowl habitat is especially desired for acquisition.

WILDLIFE--MANAGEMENT--GENERAL--Continued

Holland, William L., Jr. THE SOUTHEASTERN REFUGE PROGRAM. Presented at the 5th annual meeting, Southeastern Wildlife Conference, Edgewater Park, Mississippi, October 22, 1951. 1-19 p.

Results of questionnaire sent to each of the Southeastern States. Gives tabular and other data on number and size of refuges, values, costs, personnel, equipment, major problems, management, posting, and future plans. Each refuge of a state is listed and its acreage given.

Kabat, Cyril. GAME RESEARCH METHODS AND RESULTS OUTLINED. Wisconsin Conservation Commission, Activities Progress Report no. 42: 8-13. Dec. 1951.

Techniques and findings are briefly sketched for all forms of game in Wisconsin. The article is essentially a digest of the state's game research and management programs. It contains many illuminating passages, including several on the advisability of heavily harvesting certain game species, and mentions various new procedures.

Miner, Henry D. GAME STOCKING. DOES IT PAY? West Virginia Conservation 15(9): 14-17, 36, illus. Dec. 1951.

Facts and figures are cited to show that game stocking is not only futile but excessively expensive. It is justified only where the species is absent from suitable territory.

Murie, Olaus J. DO YOU WANT HUNTING IN NATIONAL PARKS? Natural History 60(10): 464-467, illus. Dec. 1951.

Public Law 787 contains a provision that if it becomes necessary to reduce the elk herd of Grand Teton National Park, some shooting by persons holding a state hunting license and deputized as temporary rangers may be authorized within Park boundaries. There was no intention that this should set a precedent, but already pressure for hunting in other National Parks has begun. The author stresses the importance of preventing hunting in National Parks and eloquently describes the values of such reserves.

Nordberg, Sven. GAME AND GAME MANAGEMENT IN THE ÅLAND ARCHIPELAGO (Det jaktbara villebrådet och jaktvården på Åland.) Suomen Riista 5B: 7-59, illus. (1951) 1952.

Has English summary. The history and present status of wildlife in this archipelago near Southwestern Finland is analyzed in relation to current uses and regulations. Large game and predators were exterminated between 1600 and 1900 and the marten has since joined the list. The first game law was passed in 1925. Now the authorities can give complete protection to endangered species. Seabirds have been given this protection several times, especially since the war, and at present over 25% of the archipelago is closed to seabird shooting. Private societies have been important in setting up game areas and otherwise encouraging game. Data are given on the present status of fox (common), squirrel (rather scarce), muskrat (common, trapping not restricted), snow hare (locally common), moose (reappeared by immigration, but now down to about 20), capercaillie (introduced, finally disappeared), black game (widespread), hazel grouse (introduced, rare), willow grouse (introduced, failed), common partridge (rare), pheasant (introduced with temporary success but finally failed during hard winters), and eider (increasing under protection). Population data are given for velvet scoter, goosander, redbreasted merganser, and tufted duck. Crows, white-tailed eagles, and great black-backed gulls are major enemies of the seabirds. Crows are being poisoned and there is a bounty on the gull. The gull is considered a predator important enough to undo the work of protection.

WILDLIFE--MANAGEMENT--GENERAL--Continued

Siivonen, Lauri. ON THE RELIABILITY OF THE GAME INQUIRIES OF THE FINNISH GAME FOUNDATION (Suomen Riistanhoito-säätiön riistatiedustelujen pätevyydestä). Suomen Riista 6: 149-154, 192-193. 1951 (1952).

With English summary. The foundation makes 3 game surveys a year, each based on the opinions of 550 observers. Each game species is then rated as absent, low, average, or high. The results have been checked by comparison with kill figures and with information from local game associations. All correspond rather closely. Total kill in each province can be predicted from the inquiries. The number of observers needed in each province for accurate results is estimated statistically. "The fact that even these relatively small numbers of individual observations give such an accuracy is due to the remarkable simultaneity of the fluctuations in populations within the entire country. On the other hand, the considerable yearly fluctuations themselves cause the game inquiries to give a fairly accurate idea of the relative size of the populations."

Voipio, Paavo. ONE-SIDED LEVYING OF MALES, A DISASTROUS PROCEDURE FOR THE DEVELOPMENT OF GAME STOCKS (Yksipuolinen koiraiden verottaminen tuhoisa riistakannan kehitykselle). Suomen Riista 6: 66-82, 188-189. 1951 (1952).

With English summary. Until 1951, hunting regulations in Finland allowed seasons 2 to 3 times as long for cocks as for hens of blackgame and capercaillie. Abnormal sex ratios and rather low populations are said to have resulted. "The blackgame and probably also the capercaillie are promiscuous (not polygamous), and the natural sex ratio is evidently 1 : 1, or with a slight preponderance of males. A sharp deviation from this ratio at the expense of males has an unfavourable effect on display ceremonies (psychological factors) and thus on the productivity of the population. Furthermore, as a considerably unbalanced sex ratio decreases the effective size of the population, it may in the long run, and particularly in the sparse local populations during cyclic lows, have a detrimental effect on the survival and productivity of the population... The increased commonness of moose cows without calves and the decrease in the absolute number of moose calves within certain areas is without doubt also due to a too heavy levy of the bulls. Nor can the generally recommended sex-discriminative hunting of hares be intelligent. Hare are promiscuous and their natural sex ratio is probably about 1 : 1."

Wright, Bruce S. SOME FOREST WILDLIFE PROBLEMS IN NEW BRUNSWICK. Forestry Chronicle 27(4): 330-334, illus. Dec. 1951.

A severe indictment of the handling of wildlife in the province. "When it is appreciated that over $45,000 were expended on bounties in 1950 alone, while the Department has pleaded economy as the excuse why no technically trained game man has ever been employed, even though the hunting pressure in the province has increased 93 per cent in the last 10 years, it will be obvious that a serious review of policy is long overdue." Bounties are paid on porcupines, bears, and bobcats. Evidence is that these species are not being controlled by bounties. Control of bear and bobcat is not needed, and porcupine damage does not justify the cost of control. No claim for beaver damage has ever been paid in the province, but the 40-day season is open just before young are born. Moose are so few that the season is kept closed year after year, but no study on them is underway. Studies of deer management are also needed, for starvation and overbrowsing occur in winters that are not especially severe.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Frye, O. Earle, Jr. and David E. Swindell. THE SOUTHEASTERN PUBLIC HUNTING PROGRAM. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-11 p.

The day of free hunting is largely past. The problem is to supply hunting at a price the average man can afford. Managed hunts and public hunting areas are increasing in number and popularity despite difficulties. Tabular data are provided on number, size, and ownership of the public hunting areas of each southeastern state. Problems and costs of operation are discussed.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING--Continued

Gale, Larry R. 1950-51 GAME HARVEST. Kentucky Happy Hunting Ground 7(5): 8, illus. Sept. 1951.
Estimated and reported kill of small game and waterfowl, Kentucky. "The important types of upland game have been increasing."

Gilbert, Paul T. MANY FACTORS INVOLVED IN SETTING OF SEASONS. Outdoor Nebraska 29(4): 3-8, illus. Fall 1951.
This account of the facts and reasoning behind Nebraska's hunting regulations includes considerable information on trends in game populations. There is a graph of quail population trends, 1945-1951, that demonstrates the current dramatic upswing; and a graph of "Composition of observed pheasant population," May through October.

Hiltunen, Eero. HUNTING AND GAME MANAGEMENT IN TERVO COMMUNE IN 1950 (Metsästys ja riistanhoito Tervossa v. 1950). Suomen Riista 6: 7-31, 184-186, illus. 1951 (1952).
With English summary. Based on interviews with each hunter and trapper of this Finnish commune. Many hunting statistics are given: age and occupation of hunters, areas hunted, take of various kinds of game and furbearers, cash value of take, illegal practices. Blackgame is declining sharply, apparently because of overshooting. Game management is limited to artificial feeding, law enforcement, and predator control.

Mäki, Tauno V. THE 1951/52 HUNTING SEASONS AS RECOMMENDED BY THE GAME MANAGEMENT ASSOCIATIONS (Riistanhoitoyhdistysten suosittelemat metsastysajat metsastyskaudeksi 1951/52). Suomen Riista 6: 164-165, 195. 1951 (1952).
With English summary. The seasons proposed by the associations are contrasted with those actually put into effect. There seems to be considerable backing for shorter or later seasons, and for closed seasons on rare species. Finland.

Titus, Harold. IOWA — HAPPY HUNTING GROUND. Iowa Conservationist 11(2): 9, 14, 16, illus. Feb. 1952. [A more complete version appeared in Country Gentleman, Nov. 1951.]
Narrative account of the success Iowa has had in persuading farmers to undertake soil conservation and wildlife management measures. Game has increased greatly in 25 years. Hunters have been persuaded to respect the rights of farmers and to cooperate with them in habitat improvement. Most farmers now permit strangers to hunt on their lands.

WILDLIFE--MANAGEMENT--FARM

Ager, Jim. HABITAT DEVELOPMENT PLANTINGS...HOW PATTERNS DETERMINED. Outdoor Nebraska 29(4): 17-18, 41, illus. Fall 1951.
Observations on the trees and shrubs that have proved best for shelterbelt and wildlife planting in Nebraska, and how they should be arranged to provide proper game cover and control of snow drifting. The recommendations are based on study of many old plantings

Anderson, Wallace L. MAKING LAND PRODUCE USEFUL WILDLIFE. U. S. Dept. Agriculture, Farmers' Bulletin no. 2035: 1-29, illus. Oct. 1951. 15¢.
A popular, practical, well illustrated guide for the landowner. It avoids stressing the more elaborate and perhaps uneconomical habitat improvement schemes. It emphasises simple or multiple purpose improvements. Topics include wildlife requirements, and management of ditch banks, fence rows, hedges, marshes, odd areas, ponds, shelterbelts, windbreaks, streambanks, and wildlife borders.

Drahos, Nick. BUILDING A WILDLIFE MARSH. New York State Conservationist 6(3): 27, illus. Dec.-Jan. 1951-52.
Brief instructions, with diagrams. Average cost, $271.

WILDLIFE--MANAGEMENT--FARM--Continued

Edminster, Frank C. and Richard M. May. SHRUB PLANTINGS FOR SOIL CONSERVATION AND WILDLIFE COVER IN THE NORTHEAST. U. S. Dept. Agriculture, Circular no. 887: 1-68, illus. Nov. 1951. 30¢.

Presents the results of field tests on over 100 shrub species, and gives instructions for the care of many of them. A brief section takes up the utilization of natural growth: "...where natural stands of desired native shrubs are already present in borders, hedgerows, and odd areas, the cutting of overtopping trees may be all that is needed to make such areas as good as any that could be planted." The bulk of the paper discusses success or lack of success, culture, and uses of many shrubs.

Warvel, Harold E. THE SOUTHEASTERN FARM GAME HABITAT IMPROVEMENT PROGRAM. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-13 p.

This paper describes the great increase in this work that has occurred in recent years, discusses problems and methods of various states, and lists project expenditures and planting materials distributed by each state, 1943-1951. Shortage of material for planting is the factor limiting the program in most states.

WILDLIFE--MANAGEMENT--PREDATION AND PREDATOR CONTROL

Anonymous. PENNSYLVANIA'S WILDLIFE CONSERVATION HISTORY. CHAPTER XIII. THE BOUNTIFUL BOUNTY SYSTEM. Pennsylvania Game News 22(9): 29-30, 35, illus. Dec. 1951.

History of bounties in the state from earliest times.

Latham, Roger M. AN ANALYSIS OF THE PENNSYLVANIA BOUNTY SYSTEM. Pennsylvania Game Commission, Harrisburg. Final Report P.-R, Project 4-R: 1-35, illus. 1951.

The purpose of this report is not to discuss the merits or demerits of bounty systems, but to propose methods for increasing the effectiveness and reducing the costs of the Pennsylvania system. It is based on a survey to determine why and at what seasons bountied animals were taken, and on the economic status of the species as indicated by food habits and other data. Some recommendations are: Increase fox bounty as population declines, and tie in bounty with fur price. Sell bounty-hunting license to avoid single claims. Remove bounty from weasels, for there is no evidence it is needed. Remove bounty from horned owls during hunting season, when they are taken anyway. Continue removal of bounty from goshawk, for it is ineffective and too many other hawks are killed. Popularize hunting and trapping of predators as a sport, as "healthful outdoor recreation."

WILDLIFE--REPORTS OF ORGANIZATIONS

Anonymous. FEDERAL AID IN WILDLIFE RESTORATION. Annual report of the Pittman-Robertson program for the fiscal year ending June 30, 1951. Wildlife Management Institute. 1-56 p., illus. 1951?

General discussion of program and results, and detailed financial accounting.

Anonymous. FEDERAL WILDLIFE CONSERVATION ACTIVITIES, 1950. 82d Congress, Senate Report no. 317: 1-232, illus. May 1951.

This voluminous report contains an enormous amount of summary data on wildlife in national parks, activities of the Fish and Wildlife Service, Army Engineers, Soil Conservation Service, and Forest Service. All of the information pertains directly to wildlife or fisheries projects and problems. The whole constitutes a virtual handbook of federal wildlife programs. Appended are letters of advice from non-official conservation organizations.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Anonymous. FEDERAL WILDLIFE CONSERVATION ACTIVITIES, 1951. 82d Congress, 2d Session, Senate Report no. 1457: ix + 289, illus. April 1952.
A comprehensive report on the fish and wildlife activities and programs of federal agencies. It is similar in content to the companion volume for 1950, listed on the preceding page.

Bode, I. T. ANNUAL REPORT, 1950-1951. Missouri Conservation Commission. 1-79 p., illus. 1951?
Lists of refuges and management areas; results of the past hunting and trapping season, discussed by species or group; brief statement of P-R projects; list of Cooperative Unit projects; arrest records; data on fisheries and forestry work.

Brockelbank, J. H. ANNUAL REPORT FOR FISCAL YEAR ENDED MARCH 31, 1950. Province of Saskatchewan, Department of Natural Resources. 1-149 p., illus. 1950.
Report of the game branch includes data on fur conservation program, aerial censuses of waterfowl and antelope, local antelope starvation, game farm operations, need of restricting aircraft use in wilderness areas, game preserves, big game, fur farming, and predator control. Also graphs of annual wild fur catch (by species), 1914-1949. Most fur bearers have fared badly in recent years.

Dahlstrom, J. B. and others. TWENTY-THIRD BIENNIAL REPORT, JULY 1, 1948 TO JUNE 30, 1950, STATE OF IDAHO DEPARTMENT OF FISH AND GAME, BOISE, IDAHO. 74 p., illus. 1950?
Includes information on administration, improvement, upland game birds, big game, information and education, wildlife restoration, fur, fisheries, cooperative research unit, law enforcement, and finances.--Neil Hotchkiss.

Egan, J. Perry. TWENTY-NINTH BIENNIAL REPORT, 1948-50. Utah Fish and Game Commission. 1-66 p., illus. 1950?
Data on preceding hunting season for elk, antelope, deer; value of beaver harvests; deer damage; winter feeding; game farms; law enforcement; descriptions of research and management projects.

Harris, A. J. STATE LANDS OF ALABAMA, A BRIEF HISTORY, INCLUDING LAND GRANTS AND LAND MANAGEMENT. Department of Conservation, Montgomery, Alabama. 47 p. Jan. 1951.
Essentially a history of the legal handling of state lands. Contains little of direct interest to biologists.

Hosley, Neil W. THE FUTURE OF FISH AND GAME IN ALASKA. Farthest North Collegian 30(2): 3-4, 25-27, illus. 1950. [Copied from Polar Record 6(43).]
"Some problems that Alaska Cooperative Wildlife Research Unit at University of Alaska have to deal with."

Molstad, Arthur and others. TWENTY-SECOND BIENNIAL REPORT OF THE STATE CONSERVATION COMMISSION OF WISCONSIN, FOR THE FISCAL YEARS ENDING JUNE 30, 1949 AND JUNE 30, 1950. Madison. 128 p., illus. 1951.
The Game Management report on pages 20-52 includes information on public hunting and fishing grounds, winter feeding of game birds and deer, bounty and damage payments, the State Experimental Game and Fur Farm at Poynette, and the Federal Aid program (land acquisition, maintenance and development of Horicon Marsh, deer research, pheasant and quail research, fox research, fur research, game survey, disease studies, grouse management research, waterfowl management research, etc.).--Neil Hotchkiss.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Pouliot, Camille-E. GENERAL REPORT OF THE [QUEBEC] MINISTER OF GAME AND FISHERIES, CONCERNING THE ACTIVITIES OF FISH AND GAME FOR THE YEAR ENDING MARCH 31st, 1950. Quebec, Canada. 109 p., illus. 1951.
The first 42 pages comprise a report on game (protection, sporting activities, fish and game leases, fur service) and a report of the Biological Bureau (inventory and improvement of lakes and a report of the Biological Bureau, the Biological Station of Mont Tremblant, the Lachine Fishery Station, pollution control, education, etc.).--Neil Hotchkiss.

Vaughn, Ernest A. THIRTEENTH ANNUAL REPORT, MARYLAND GAME AND INLAND FISH COMMISSION, BALTIMORE. 1-73 p., illus. 1951.
Finances; report on game farms; live-trapping and restocking program; wildlife planting and nursery work; deer harvest 1948-50, by counties; game conditions in regions of state; Federal Aid activities; law enforcement.

MAMMALS--FAUNAS AND MANUALS

Baker, Rollin H. MAMMALS TAKEN ALONG THE ALASKA HIGHWAY. University of Kansas Publications, Museum of Natural History, 5(9): 87-117, illus. Nov. 1951.
Briefly annotated list. Two new races of Microtus pennsylvanicus.

Baker, Rollin H. MAMMALS FROM TAMAULIPAS, MEXICO. University of Kansas Publications, Museum of Natural History, 5(12): 207-218. Dec. 1951.
Annotated list with descriptions of new species of Peromyscus and Neotoma.

Hall, E. Raymond. MAMMALS OBTAINED BY DR. CURT VON WEDEL FROM THE BARRIER BEACH OF TAMAULIPAS, MEXICO. University of Kansas Publications, Museum of Natural History, 5(4): 33-47, illus. Oct. 1951.
Description of area, annotated list of 5 forms (4 of them new), and important discussion of specific and supraspecific classification of black-tailed jack rabbits.

Rausch, Robert. NOTES ON THE NUNAMIUT ESKIMO AND MAMMALS OF THE ANAKTUVUK PASS REGION, BROOKS RANGE, ALASKA. Arctic 4(3): 147-195, illus. Dec. 1951.
Describes the region, its climate, vegetation, and people, but the bulk of the paper consists of an annotated list of the mammals, with much data on game mammals. There are 9 pages on hoofed game and 6 on bears. Population status and predation are discussed. Eskimo hunting methods are described.

Soper, Dewey J. THE MAMMALS OF ELK ISLAND NATIONAL PARK, ALBERTA, CANADA. Canadian Wildlife Service, Wildlife Management Bulletin, ser. 1, no. 3: 1-24, illus. 1951.
The park is a 48,000-acre tract of forest and prairie east of Edmonton. The area, its vegetation, and its faunal affinities are described. An annotated list of mammals makes up about half the paper. The notes pertain chiefly to local distribution, relative abundance, and fluctuations in abundance. The park is fenced and contains herds of elk, mule deer, moose, and bison, all of which are kept within carrying capacity of the range.

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES

Kalela, Olavi. ON THE PERIODICITY IN THE FLUCTUATION OF ARCTIC AND HIGH-BOREAL SMALL RODENTS. [Zur Periodizität im Massenwechsel arktisch-hochborealer Kleinnager.] Archivum Soceitatis Zoologicae Botanicae Fennicae 'Vanamo' 3: 169-178, illus. 1948.
In this paper the author continues his studies on fluctuations in mammal populations, especially those of rodents in Fennoscandia. The paper includes

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES--Continued

a discussion on the length and synchronization of the fluctuations of several species, making an effort to prove that they represent a 4 year periodicity instead of a 3-4 ($3\frac{1}{2}$) year one as described by Siivonen (1948). The superposition of 4 and 10 year cycles is also discussed.--Teppo Lampio.

MAMMALS--SHREWS, MOLES, BATS

Hock, Raymond J. THE METABOLIC RATES AND BODY TEMPERATURES OF BATS. Biological Bulletin 101(3): 289-299, illus. Dec. 1951.
Experimental work on Myotis lucifugus and general discussion.

MAMMALS--RABBITS AND PIKAS

Bruna, Joe. KENTUCKY RABBIT INVESTIGATIONS. Presented at the 5th Southeast Wildlife Conference, Edgewater Park, Mississippi, October 22-24, 1951. 1-21 p., illus.
A life history study based largely on live trapping. Methods are well described. Many data are given on breeding, nesting, sex ratios, age and growth, home ranges, parasites and disease, census methods, and hunter kill. Several tables and graphs are included.

Hall, E. Raymond. A SYNOPSIS OF THE NORTH AMERICAN LAGOMORPHA. University of Kansas Publications, Museum of Natural History, 5(10): 119-202, illus. Dec. 1951.
Presents the most modern taxonomic arrangement and as much as is known of the distribution of our rabbits, hares, and pikas. There are keys for all groups down to species, and maps for all forms. There are also taxonomic notes, summarized life histories for genera, many skull drawings, synonymies, and a 7 page bibliography. An extremely useful work.

Hall, E. R. and Keith R. Kelson. COMMENTS ON THE TAXONOMY AND GEOGRAPHIC DISTRIBUTION OF SOME NORTH AMERICAN RABBITS. University of Kansas Publications, Museum of Natural History, 5(5): 49-58. Oct. 1951.
Intergradation between Sylvilagus floridanus and S. nuttallii was not found, though it had been hypothesized. Notes on these species and S. audubonii include locality corrections and changes in specific allocation of certain races.

Nichols, J. E. RABBIT CONTROL IN AUSTRALIA: PROBLEMS AND POSSIBILITIES. Nature 168(4283): 932-934. Dec. 1, 1951.
The author reviews at length Ratcliffe's 1951 bulletin on this topic [see Wildlife Review 65: 19]. Ratcliffe reported very limited success with the propagation of myxomatosis epidemics, but while his paper was in press wet weather favored mosquito vectors and millions of rabbits were killed over vast areas. Several mosquito species were involved, as well as black flies and sand flies. Some recovered rabbits were found, and drought areas were little benefited, but future distribution of virulent strains of this virus is planned. The disease is not pathogenic in man. [But is it pathogenic to the native animals?]

MAMMALS--RODENTS--GENERAL AND CONTROL

Emerson, Don. LAKELAND, FLA., ASSAULTS MOSQUITOES BY PLANE. American City 66: 96. Dec. 1951. [Copied from Public Health Engineering Abstracts 32(3).]
The abstract, by W. G. Riddle, tells of the insecticidal work and adds: "Rodent infested swamp areas were 'bombed' with cellophane wrapped baits of Warfarin Compound No. 42. Areas infested with water hyacinths were sprayed from the air with 2-4-D. Both procedures were successful."

MAMMALS--RODENTS--GENERAL AND CONTROL--Continued

Giban, J. and P. Cuisance. RODENT CONTROL. Bull. Tech. Inform. Ingenieurs Serv. Agric. 49: 265-273. 1950. [Copied from Public Health Engineering Abstracts 31(12).]

In 1949 a large area of crop land in France was invaded by rodents, chiefly Microtus arvalis, M. agrestis, and Apodemus sylvaticus. Many control methods (gas, virus, poisons) were tested and their effectiveness and economy are reported. "Among recent products, 2-chloro-4-methyl-6-dimethylaminopyrimidine has been used in Germany, Switzerland, and Belgium, and proved only slightly dangerous to game birds; red squill produced varied effects; DDT and ANTU have been particularly effective against Norway rats (Rattus norvegicus) and mice (Mus musculus), but they should rate 75% active ingredients to obtain a 100% destruction of field-mice and would then be too expensive."

Ross, Ward. WARFARIN, ITS PAST AND FUTURE. Modern Sanitation 3: 24-27, 66. 1951. [Copied from Public Health Engineering Abstracts 31(12)].

Includes discussion of uses, problems, and contemplated improvements.

MAMMALS--SCIURIDS

Huestis, Ralph R. THE GOLDEN MANTLED GROUND SQUIRREL. Crater Lake Nature Notes (Crater Lake National Park, Oregon), Special Number. 1-22 p., illus. 1951.

Original research on natural history, behavior, burrow plans, breeding, sex ratio, home range size, dispersal of young. Some of the material presented is difficult to evaluate because of the lack of a study area map and data on distances traveled.

Redmond, Howard R. SQUIRREL BREEDING STUDIES AND THEIR RELATION TO HUNTING SEASON AND GUNNING PRESSURE, WITH NOTES ON HABITAT CONDITIONS. Presented at the Southeastern Association of Game and Fish Commissioners Conference, Edgewater Park, Mississippi, October 22-24, 1951. 1-24 p., illus.

Detailed report on a 2-year study of gray and fox squirrels, mainly gray. Data are presented on number of young, sex ratios, percent of females in various stages of breeding at each season of year, age and sex classes in harvest, hunting methods, gun pressure, hunting success, crippling loss, weights, habitat conditions in relation to squirrel population, and proper time for open season. There are 4 graphs and numerous tables.

Shorten, Monica. SOME ASPECTS OF THE BIOLOGY OF THE GREY SQUIRREL (SCIURUS CAROLINENSIS) IN GREAT BRITAIN. Proceedings of the Zoological Society of London 121(2): 427-459, illus. Aug. 1951.

Subspecies present in Britain; color phases; breeding in nature; breeding in captivity; breeding under artificial light; growth; correlation of physical characters with age of young; molts; nesting activity. Censuses based on leaf nests (dreys) may be "wildly inaccurate." Sight counts are not practicable. This is one of the most important papers on the grey squirrel. It contains great amounts of information on reproduction and age determination. Comparisons with American data are made throughout.

Voipio, Paavo. SOME RESULTS OF INVESTIGATIONS ON THE FUR QUALITY OF THE FINNISH SQUIRREL WITH NOTES ON PRACTICAL PROBLEMS INVOLVED (Eräitä oravaturkiksemme laatuakiskevia tutkimustuloksia ja käytännöllisiä ongelmia). Suomen Riista 6: 128-135, 191-192. 1951 (1952).

With English summary. The frequency of color phases in different areas of Finland is described and mapped, and the possible commercial importance of the phases is discussed. A type of skin handling that leaves the tail visible is recommended because it would help in evaluating color and texture of the back fur.

MAMMALS--BEAVER

Conibear, Frank. THE BEAVER'S LODGE. Beaver, A Magazine of the North 282, Sept. 1951: 36-37, illus.
A veteran trapper, using Indian lore and his own information, tells of the floor plan, internal construction, and use of the beaver lodge. Refuge holes in the bank, below frost line, are also discussed. The author contends that some previous descriptions of the lodge interior are seriously wrong.

Knudsen, George J. WISCONSIN'S EAGER BEAVER. Wisconsin Conservation Bulletin 16(2): 11-15, illus. Dec. 1951.
Although primarily a popular account, this article contains some original information on weights of large beaver, foods, breeding season, average number of young, density in regions of the state, preference for cut or burned areas, 1950 harvest (11,544), fur value, value of beaver work to forest and game, beaver damage to crops, roads, and trout streams. Beaver dams can cause overheating of some types of trout streams, but not all types, and are not the only factor adversely affecting trout.

MAMMALS--MUSKRAT AND NUTRIA

Beshears, W. Walter, Jr. MUSKRATS IN RELATION TO FARM PONDS. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Gulfport, Mississippi, October 22-24, 1951. 1-8 p.
Gives many details on burrowing, especially in dams, and the damage thus caused. Protective measures are use of broad dams of heavy soil, rip-rap, and trapping-out. Also discussed: breeding, productivity, weights, range of activity, emigration, economic value.

Brander, T. ON MUSKRAT FROM THE POINT OF VIEW OF GAME MANAGEMENT (Om bisamråttan ur jaktvårdssynpunkt). Suomen Riista 5B: 84-142, illus. 1951 (1952).
A monographic review of Finnish experience in muskrat management. Habitat requirements are discussed with special consideration of water level. The poacher is the chief enemy, but predators are considered important. Habitat improvement measures are described. A surprisingly effective and cheap method of keeping foxes from the nests during winter is said to be described. Muskrats damage waterfowl habitat and interfere with waterfowl hunting, but value of the fur more than compensates. [The English summary of this long paper is nonspecific. Apparently the author writes about a more intensive form of muskrat culture than is practiced in America. The lengthy bibliography includes no American technical references on muskrats.]

Dozier, Herbert L. THE PRESENT STATUS AND FUTURE OF NUTRIA IN THE SOUTHEASTERN STATES. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Gulfport, Mississippi, October 23, 1951. 1-10 p.
Annual take in Louisiana and its value, 1943-51; lack of competition with muskrat (usually occupies different marsh type and uses different foods); preferred habitats; distribution by man; limited value in weed removal; good places for further introduction; present demand and future market prospects; primeness; need for cautious long term outlook. Nutria may become pest if pelt price drops far and muskrat is in good supply.

Knight, Iola W. Musfeldt. A REPORT ON MITES INFESTING THE MUSKRAT (ONDATRA ZIBETHICA OSOYOOSENSIS) IN BRITISH COLUMBIA. Canadian Entomologist 53(10): 279-280. Oct. 1951.
Five species of mites, only one of which had previously been reported on muskrat, were taken from a collection of 12 rats.--R. T. Mitchell.

MAMMALS--MUSKRAT AND NUTRIA--Continued

Shanks, Charles E. and George C. Arthur. MOVEMENTS AND POPULATION DYNAMICS OF FARM POND AND STREAM MUSKRATS IN MISSOURI. Missouri Conservation Commission. Federal Aid to Wildlife Projects Mo. 13-R and Ill. 30-R. 1-12 p., illus. Dec. 1951.

Results of live trapping and other studies in 40 farm ponds, 9 miles of stream, 1 large marsh, and a slough and stream area. Muskrats in farm ponds of less than 1 acre produce no more than 1 litter, are very likely to migrate, have little association of adult males with rest of family, reach maximum numbers in June and July, and their use of a pond does not seem correlated with the pond's vegetation. Pond rats migrate mainly from pond to pond, chiefly in spring and fall. Causes and economic effects of these movements are discussed. Pond rats can be controlled by trapping, encouraged by refuge areas. Summer ranges of stream rats are equal to about 1/2 the distance between colonies.

Sprugel, George, Jr. SPRING DISPERSAL AND SETTLING ACTIVITIES OF CENTRAL IOWA MUSKRATS. Iowa State College Journal of Science 26(1): 71-84, illus. Oct. 1951.

Describes the activities mentioned in the title, and the effect of weather and floods upon them. There is much information on territorial behavior of muskrats.

MAMMALS--HOUSE RATS AND MICE

Barnett, S. A., A. H. Bathard, and Mary M. Spencer. RAT POPULATIONS AND CONTROL IN TWO ENGLISH VILLAGES. Annals of Applied Biology 38: 444-463. 1951. [Copied from Public Health Engineering Abstracts 31(12).]

Rattus norvegicus. From authors' abstract: "6-monthly censuses were taken of the rat populations for 3.5 yrs. The method was either to record visits by rats to bait points, or to lay a surplus of wheat until the daily take leveled off, and to take the level so reached as a relative measure of the rat population. Test baiting was found unreliable. On certain occasions, after a census, treatments, consisting of 1, 2 or 3 prebaiting-plus-poisoning strikes, were done. Lasting reductions of rat populations were achieved only by double or triple strikes, after which the numbers took more than a year to recover. When the rat populations were low, mouse activity at the bait points increased; the main spp. were Mus musculus and Apodemus sylvaticus. It is suggested that, to combine effective control with labor economy, treatments in such areas should always consist of 2 strikes, at intervals of a yr. or longer; but that technics which make it possible to dispense with prebaiting are badly needed."

Bonnet, David D., Edward S. C. Mau, and Bertram Gross. CAGE TESTS WITH WARFARIN ON THE HAWAIIAN RAT, RATTUS HAWAIIENSIS STONE, AND THE HOUSE MOUSE, MUS MUSCULUS LINN., IN HAWAII. Public Health Reports 66(52): 1734-1737, illus. Dec. 28, 1951.

Treated oats were not quite as acceptable as untreated oats, but none of the animals refused the baits and all eventually were killed by the Warfarin. Time of death and amounts of poisoned oats eaten are given in graphs and a table. Results of autopsies are reported.

Chitty, Dennis. RATS, MICE AND AGRICULTURE. Annals of Applied Biology 38(3): 724-725. Sept. 1951.

Great Britain. Fields serve as reservoirs for farm rats. Rats may eat more chicken feed than do the chickens. Rats enter ricks soon after harvest, breed continually, and increase in numbers during first 3 months of year. There are mice in nearly all ricks, more than 50 in many ricks. Control methods are successful (with aid of prebaiting) but it is difficult to maintain control pressure. "Cats, however, though unable to deal with well-established infestations, have proved admirable at preventing serious re-infestation after successful treatments with pre-baiting and poisoning." [Apparently another example of overly small populations being unfavorable, even in avoiding predation.]

MAMMALS--HOUSE RATS AND MICE--Continued

Davis, David E. OBSERVATIONS ON RAT ECTOPARASITES AND TYPHUS FEVER IN SAN ANTONIO, TEXAS. Public Health Reports 66(52): 1717-1726. Dec. 28, 1951.
Seasonal abundance of various fleas, lice, and mites on Rattus rattus and R. norvegicus, and the relationship of this seasonal abundance to the incidence of typhus in rats and human beings. Norway rats had more fleas and lice than did roof rats; males of both had more fleas than did females. Roof rats had fewer male fleas than Norway rats had. Rats positive for typhus had more fleas than those negative for typhus.

Frank, J. F. A STUDY ON THE INCIDENCE OF TRICHINOSIS IN WILD RATS IN THE MARITIME PROVINCES. Canadian Journal of Comparative Medicine and Veterinary Science 15: 279-283. 1951.
Examined 460 rats and found 20 (4.35%) infected.--C. M. Herman.

Gross, Bertram, Robert H. Baker, and David D. Bonnet. USE OF WARFARIN-TREATED OATS AS A PLAGUE SUPPRESSIVE MEASURE IN HAWAII. Public Health Reports 66(52): 1727-1733, illus. Dec. 28, 1951.
Use of 200 Warfarin stations for 91 days in a cane field effectively reduced populations of Norway and roof rats and house mice, but large numbers of Rattus hawaiiensis were still present. R. hawaiiensis is readily killed by this poison in the laboratory; its resistence in the field may be related to its feeding habits, or it may be that large numbers immigrated from surrounding areas. As this species is important as a plague reservoir, better control methods must be sought.

Krumbiegel, I. RAT DISEASE AND MOUSE-FEVER. CONNECTIONS BETWEEN DISTRIBUTION OF RODENTS AND TRANSMISSION OF DISEASES. Universum 5: 733-737. 1950. [Copied from Public Health Engineering Abstracts 31(12).]
"A survey, with distribution maps, of occurrences of Leptospira spp. (causal agents of 'field fever') on Murid spp. and other mammals, and transmission to man.--Max Onno."

MAMMALS--OTHER RODENTS

Eads, R. B., and B. G. Hightower. A NEW MITE FROM NESTS OF THE WOOD RAT, NEOTOMA MICROPUS. Entomological News 62(8): 249-250. Oct. 1951.
Androlaelaps johnstoni; Texas.--R. T. Mitchell.

Fritz, Emanuel. MORE ON BEAR DAMAGE: PACK RATS. Journal of Forestry 49(12): 917. Dec. 1951.
Pack rats (Neotoma) are shown to do extensive girdling on redwood sprouts in cut-over areas where predators have been practically exterminated. Some of this damage has previously been attributed to bears.

Kelson, Keith R. TWO NEW SUBSPECIES OF THOMOMYS BOTTAE FROM NEW MEXICO AND COLORADO. University of Kansas Publications, Museum of Natural History, 5(6): 59-71, illus. Oct. 1951.
Includes map of ranges of all 18 races of this species in New Mexico.

Manning, Thomas Henry. THE VARYING LEMMING IN CAPTIVITY IN OTTAWA. Arctic Circular, 3(2): 20-21. 1950. [Copied from Polar Record 6(43).]
"Account of several groups of Dicrostonyx groenlandicus and one group of Brown Lemming (Lemmus trimucronatus) held in captivity in 1949."

MAMMALS--FURBEARERS--GENERAL

Hausman, Leon A. WHEN YOU BUY FURS. Pennsylvania Game News 22(9): 36-39, illus. Dec. 1951.
Primarily on how a buyer may evaluate fabricated fur items, but contains a table showing relative durability of many kinds of fur as determined by testing machine, and discusses factors in durability. Dyed or clipped furs have much less durability than natural furs; clipping is especially weakening.

MAMMALS--FURBEARERS--GENERAL--Continued

Kennamer, Earl Franklin. WILD FURBEARER AND ECONOMIC IMPORTANCE IN ALABAMA. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-4 p.
Questionnaire returns place the value of the 1950-51 Alabama fur crop at $411,444, or an average of $125 for each holder of a trapping license. Much better prices were paid by a New York auction company than by a large local buyer.

MAMMALS--MUSTELIDS

Dinter, Z. von, and K. E. Kull. BOTULISM IN MINK IN SWEDEN. Nordisk Veterinaermedicin 2: 286-301. 1950.

Guiguet, C. J. AN ACCOUNT OF WOLVERINE ATTACKING MOUNTAIN GOAT. Canadian Field-Naturalist 65(5): 187. Sept.-Oct. 1951.
Reports 2 futile attacks by a wolverine on a herd of mountain goats in British Columbia.

Hall, E. Raymond. AMERICAN WEASELS. University of Kansas Publications, Museum of Natural History, 4: 1-466, illus. Dec. 1951.
This revision is an excellent taxonomic study complete with descriptions, keys, maps, comparisons, tables of data, skull photographs, and bibliography. But it is much more than this. A long discussion of the natural history of each species precedes the subspecies accounts. Introductory sections take up paleontological history of the group, skeleton and dentition, disparity in numbers of males and females, variation of several types, and a long account of distribution and speciation. When the study was begun in 1925, 47 kinds of American weasels were recognized, with 29 full species. In the present volume 68 forms are recognized, but only 4 full species. North American species are Mustela erminea, rixosa, and frenata. The ferret and mink are not treated, but their named forms are listed (p. 82). It is safe to say that this publication is one of the finest systematic monographs of a mammalian group that has yet appeared.

Marshall, William H. PINE MARTEN AS A FOREST PRODUCT. Journal of Forestry 49(12): 899-905, illus. Dec. 1951.
The author reviews work by himself and others on marten biology and offers practical management suggestions. Topics considered include: cover use, cruising radius, foods, breeding, decimating factors, numbers, and production. The marten has a low rate of reproduction and is easily trapped--commonly over-trapped. The registered trap-line system or a variant of it preserves adequate breeding stock, and permits regulation of the take. Suitable means of human management to achieve this end are proposed. The possibility of incorporating habitat improvement for marten in a forestry program is mentioned.

Murie, Adolph. WOLVERINE TRAILS AT DENALI. Living Wilderness 16(39): 13-20, illus. Winter 1951-52.
The author tells of his experiences with wolverines in Alaska, and presents detailed drawings and descriptions of tracks and gaits. Ferocity of wolverines has been a bit overrated; several times the author saw them run from single wolves.

MAMMALS--DOGS, WOLVES, FOXES

Banfield, A. W. F. POPULATIONS AND MOVEMENTS OF THE SASKATCHEWAN TIMBER WOLF (CANIS LUPUS KNIGHTII) IN PRINCE ALBERT NATIONAL PARK, SASKATCHEWAN, 1947 TO 1951. Canadian Wildlife Service, Wildlife Management Bulletin, ser. 1, no. 4: 1-21, illus. 1951.
The history and present status of hoofed game in the area is discussed. The winter travels of wolves are discussed and mapped for three years. The population of wolves is estimated. Control since 1947 apparently has lowered the wolf population. The author suggests suspending wolf control for two years to see if wolves will increase and if the game herds will suffer.

MAMMALS--DOGS, WOLVES, FOXES--Continued

Mäki, Tauno V. HOW TO CONTROL THE FOX POPULATION (Miten kettukanta pidetään kurissa). Suomen Riista 6: 136-148, 192, illus. 1951 (1952).
English summary: "The writer describes different ways of controlling red fox populations by hunting and trapping: using burrow dogs, flag lines, steel traps, and shooting from carrion. A special carrying bag made of packsack...considerably facilitates the setting out of the flag line. The writer gives instructions for building a simple and convenient watch hut used by carrion shooters...Treatment of steel traps before use is described in detail as well as recommendable ways of setting them out."

Maunton, Ed. SPEAKING OF COYOTES. New York State Conservationist 6(3): 8-9, illus. Dec.-Jan. 1951-52.
A N. Y. state trapper tells (with sketches) how to trap coyotes. Stomachs he has examined indicate that foods of coyotes in the state are much like those of foxes, with many small animals and much vegetable matter. He does not consider coyotes a threat to the deer population. Trapping, considered the best control in N. Y., requires about 30 man-hours per coyote.

Robinson, Weldon B. and Maynard W. Cummings. MOVEMENTS OF COYOTES FROM AND TO YELLOWSTONE NATIONAL PARK. U. S. Fish and Wildlife Service, Special Scientific Report, Wildlife no. 11: 1-17, illus. Dec. 1951.
Results of tagging studies. About half of the park coyotes drift out of the park in fall and winter. This is true of both old and young, but young move farther. There is no reason to think that coyotes are driven into the park by persecution, or that many of them recognize it as a sanctuary. About half of the migrants, mostly the older ones, return to the park by spring. Travel distances average 28 miles, with the maximum 115 miles. The drift is not dependent on game migrations. Females show a slightly greater tendency to migrate. "Coyote movements from the Park, as well as those from other high regions, are bound to have a certain populating effect in surrounding areas."

MAMMALS--CATS

Seagers, Clayt. THE LYNX IS BACK. New York State Conservationist 6(3): 40, illus. Dec.-Jan. 1951-52.
Describes a lynx recently taken in Washington Co., N. Y., and provides photographs comparing it with a bobcat in respect to head, feet, tail, and ear tufts. These photographs probably afford the best comparison of the external characters of the 2 species that there is in the literature. The author-artist also presents an exceptionally attractive full-page drawing of the head. An interesting sidelight is that bobcats average heavier than lynxes, although lynxes look larger.

MAMMALS--BIG GAME--GENERAL

Cowan, I. McT. THE DISEASES AND PARASITES OF BIG GAME MAMMALS OF WESTERN CANADA. Report of the Proceedings of the 5th Annual Game Convention: 37-64, illus. 1951.
Based on examination of about 150 specimens, chiefly coast deer. A few other deer, moose, caribou, elk, goat, and sheep were also examined. The parasites, diseases, and abnormalities observed are listed and some are illustrated by good photographs. There are brief discussions of the significance of many of the findings. The introduction contains many thought provoking hypotheses and might well be required reading for all students of wildlife management. The author points out that multiple parasitism is the normal condition, and determination of the importance of an infestation is a matter of judgement. One must ask whether a parasite renders the host less fit to survive, and whether it interferes with its sporting or food values, and if so at what concentrations and under what conditions. Is the parasite harmful to man or other animals? Many parasites are rare or apparently harmless. Others are harmless except in large numbers; some are harmful if present at all. In

MAMMALS--BIG GAME--GENERAL--Continued

general, poor food conditions and overcrowding are probably the most important factors contributing to outbreaks of parasitic disease in wild game.--C. M. Herman.

MAMMALS--HOOFED (Except deer)

Averin, Yu. V. ON THE BIGHORN OF KAMCHATKA (O snezhnom barane na Kamchatke). Byulleten' Moskovskogo Obschchestva Ispytateley Prirody. Otdel Biologicheskiy [Bulletin of the Moscow Society of Naturalists. Biological Section] (Moscow), Tom 56, no. 1: 15-26. 1951. [Copied from Polar Record 6(43).]
"Distribution, physical dimensions and feeding habits of Ovis nivicola nivicola Eschscholtz, based on author's field work in 1940-46."

Glazner, W. C. CONDUCTED ANTELOPE HUNTS...WHY? Texas Game and Fish 10(1): 2-5, illus. Dec. 1951.
A discussion of controlled antelope hunts in Texas and how they are handled. Annual kill varies from 297 to 629 with hunter success about 92%. It may become desirable soon to harvest some of the females, but at present this is not legally possible. Attempts to start new herds by transplanting have been somewhat disappointing, particularly outside the Trans-Pecos region.

Rustich, Ilmari. THE LICHEN WOODLANDS IN LABRADOR AND THEIR IMPORTANCE AS WINTER PASTURES FOR DOMESTICATED REINDEER. Acta Geographica 12: 1-48. 1951. [Copied from Arctic 5(1).]
Considers extent, productivity, grazing capacity, and grazing cycle of the Labrador lichen stands. The author believes they should provide good winter pasture for half a million reindeer if snow conditions are favorable.

Manteyfel, P. THE SOVIETS HARNESS THE ARCTIC, by...P. Manteifel translated from Russian by John C. Brinsmade under the supervision of Nady Denie. Farthest North Collegian 30(2): 6-7, 32-33, illus. 1950. [Copied from Polar Record 6(43).]
"Excerpts from a translation of an article which appeared in Svetskaya Arktika; short notes on domestic use of moose, yak and marmots in Soviet Arctic."

Roe, Frank Gilbert. THE NORTH AMERICAN BUFFALO: A CRITICAL STUDY OF THE SPECIES IN ITS WILD STATE. University of Toronto Press. viii + 957 p. 1951. $12.00.
This great historical study of the bison has been reviewed at length by A. W. Schorger [Journal of Wildlife Management 16(1)] and Wm. Rowan [Journal of Mammalogy 33(1)]. The author, who is not a biologist, spent 30 years collecting and analysing records of this animal, and has produced the most important work on it that has appeared. Schorger points out that some important locality references were missed or misinterpreted, but on the whole the book is a mine of information on everything pertaining to the history and biology of the bison and its relation to man. The appendices alone run more than 200 pages, and the index is very detailed. A valuable feature of the work is its critical appraisal of previous ideas.

Young, H. A. EDUCATION CAN HELP SAVE THE CARIBOU, COMMISSIONER SAYS. News of the North 6(27): 2. 1950. [Copied from Polar Record 6(43).]
"Letter by Commissioner, Northwest Territories, discussing causes of decrease in population of caribou in Northwest Territories, and possible conservation measures."

MAMMALS--DEER

Anonymous. THIRD DEER HUNT IN THREE YEARS...68 PER CENT KILL IN '50. Outdoor Nebraska 29(4): 31-34, illus. Fall 1951.
In 1950, 686 deer (mostly mule deer, only 7 whitetails) were taken on permits from the few areas of Western Nebraska that were open. About 3 out of 4 hunters were successful. These and other hunting statistics are compared with those for

MAMMALS--DEER--Continued

previous years. Average weights are given for various age groups. Stomach examinations indicated heavy feeding on agricultural crops.

Barick, Frank B. DEER RESTORATION IN THE SOUTHEASTERN UNITED STATES. Presented at the 5th annual meeting, Southeastern Association of Game & Fish Commissioners, Edgewater Park, Mississippi, October 22-23, 1951. 1-18 p., illus.

A long, detailed paper. It gives distribution (with maps) and numbers of deer of each state in the region at the low, the present, and the future (capacity). There is much on trapping and handling techniques. Sources of out-state introductions are listed. Loss or maintenance of size of introduced deer are described. Reproductive rate of stocked deer is discussed. Required size and protection of restoration areas is considered, as is use of salt and food patches to hold deer in these areas. Great problems are dogs and poaching; laws used or needed to control them are cited. Figures are given on numbers of deer in heavily populated areas. Crop damage and compensation for it are mentioned. Hunting regulations and estimated harvests in each state are tabulated. All state deer research or management programs in the region are listed, and needs of other studies are outlined.

Brohn, Allen, and Leroy Korschgen. THE PRECIPITIN TEST -- A USEFUL TOOL IN GAME LAW ENFORCEMENT. Missouri Conservation Commission. 1-13 p. Nov. 1951.

Test for distinguishing deer flesh and blood from those of domestic animals. Reprinted from Transactions of the 15th North American Wildlife Conference.

Coulter, Malcolm W. THE DEER HERD IN MAINE. Maine Forester: 62-67. [Reprints paged 1-7.] 1951.

A brief review of deer population problems in other states, and comments on the need of continuing close watch on the Maine herd so that it can be reduced quickly when necessary. Maine does not have a buck law and overpopulation is not yet a problem (except perhaps locally), and it is desirable that no buck law or other new hunting restrictions be legislated.

Donaldson, David, Carl Hunter, and T. H. Holder. ARKANSAS' DEER HERD. Arkansas Game and Fish Commission. Federal Aid Publication, Projects 17-D and 20-R: 1-72, illus. 1951.

An unusually attractive, well illustrated bulletin. It discusses history and status of the herd, limiting factors, transplanting program, damage to farms and forests, present population and carrying capacity of each county, discussion of deer and elk in National Forests, and browse studies. Much of the population data was obtained by observation of relative browse utilization. Colored maps show acres per deer in certain areas. Some parts of the state have too many deer and other parts have too few. Chief limiting factors are poaching, dogs, habitat difficulties, and disease. Predation by wild animals is considered important only in areas being restocked.

Haugen, Arnold O. AMMATE IN THE DIET OF DEER. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Gulfport, Mississippi, October 22-24, 1951. 1-7 p.

Feeding of Ammate and Ammate treated foliage did not injure experimental deer, and seemed to help them gain weight. Leaves, buds, and twigs of wild black cherry (sometimes fatal to livestock) did not poison the deer, although they lost weight on this diet. Cause of the 1949 deer losses in the Talladega National Forest remains unexplained.

Howard, Walter E. and H. A. Hjersman. DEER REPELLENTS. California Agriculture 5: 7. Sept. 1951. [Copied from Journal of Range Management 5(1).]

MAMMALS--DEER--Continued

Leffler, Ross L. TOO MANY DEER--IN 1928. Pennsylvania Game News 22(9): 21-25, illus. Dec. 1951.
Reproduction of a lecture by a former president of the Pennsylvania Game Commission on the subject, "Why Pennsylvanians must shoot the surplus does." The problems and the author's treatment of them are identical with those of today. Overpopulations and the proper way to control them were understood long ago, although the public still is but partially convinced.

Pietsch, Lysle R. IS ILLINOIS READY FOR A DEER SEASON? Outdoors in Illinois 17(1): 4-7, illus. Winter 1951.
Illinois has herds of about 1000 deer in both the northern and southern parts of the state. The southern range, having large forest areas, will support a much larger herd. The northern area has less good deer range and has local overpopulations at present, especially along the Rock River. There is also overpopulation on the Horseshoe Lake Refuge island, and live-trapping has not reduced it adequately. A controlled open season in the Rock River region would be desirable, but public opinion does not favor it. Poaching is the chief limiting factor in the state.

Shaw, Samuel P. and Charles L. McLaughlin. THE MANAGEMENT OF WHITETAILED DEER IN MASSACHUSETTS. Division of Fisheries and Game, Research Bulletin no. 13: vi + 59 p., illus. 1951.
Since 1910 hunters in the state have been allowed to shoot deer of any age and either sex. Hunters outnumber deer by about 3 to 1, but the herd has steadily increased and is in sound condition. There is no stunting and only very local overbrowsing. The present bulletin is a well rounded report that discusses history of deer in state, environmental influences, ages, sex ratios, breeding, hunting pressure, regional abundance, value of sanctuaries, effect on forest, and crop damage. Recommendations are made for special seasons, control of dogs, and control of illegal hunting. The extensive question and answer type summary seems excellent.

Williamson, Clarence. THE COMPARATIVE FORAGE UTILIZATION BETWEEN ROCKY MOUNTAIN MULE DEER AND DOMESTIC LIVESTOCK. Wyoming Range Management, Issue no. 25: 3 p. July 1950.
Abstract of a University of Wyoming M. S. thesis. The author compared a range from which livestock had been excluded since 1931 with one that was used by both deer and livestock. He concludes in part: "Serious forage competition may exist when either deer or livestock exceed the potential of the winter deer range.....Much of the preferred deer forage is not used by cattle. Hence the range trends encouraged by the two different feeding habits, tend to complement each other.....When preferred forage species are lacking, deer will consume more grasses. Conversely, cattle will utilize more browse when grasses are scarce."--Neil Hotchkiss.

MAMMALS--MARINE

Ewer, R. F. RECENT RESEARCHES ON WHALES. Penguin Books, England. New Biology no. 9: 113-118, illus. Oct. 1950.
New information, popularly presented, on speed, method of locomotion, sounds produced, temperature control and insulating value of blubber.

Kirpichnikov, A. A. ON PRESENT DISTRIBUTION OF THE CACHALOT IN THE WORLD OCEAN ACCORDING TO WHALING DATA (O sovremennom rasprostranenii kashalota v Mirovom okeane po promyslovym dannym). Byulleten' Moskovskogo Obschchestva Ispytateley Priroda. Novaya Seriya. Otdel Biologicheskiy [Bulletin of the Moscow Society of Naturalists. New Series. Biological Section] (Moscow), Tom 55, no. 5: 11-25, 1950. [Copied from Polar Record 6(43).]
"Analysis of whaling statistics for 1909-46 showing catch of Physeter catodon in all oceans, including arctic and antarctic waters. Bibliography."

MAMMALS--MARINE--Continued

McBride, Arthur F., and Henry Kritzler. OBSERVATIONS ON PREGNANCY, PARTURITION, AND POSTNATAL BEHAVIOR IN THE BOTTLENOSE DOLPHIN. Journal of Mammalogy 32(3): 251-266. Aug. 1951.

Pearson, Anita K., and Robert K. Enders. FURTHER OBSERVATIONS ON THE REPRODUCTION OF THE ALASKAN FUR SEAL. Anatomical Record 111(4): 695-711, illus. Dec. 1951.
Age at first estrus, time of blastocyst implantation, reproductive performance of seals of different ages. "Some females mate as early as age 3, while others may not have their first pup until as late as age 7. Reproductive failure can be blamed but rarely on a failure to ovulate.....the loss in ova and embryos between ovulation and parturition may be as high as 24%.....A corpus luteum of pregnancy persists at least 4 months and usually can be seen 9 months after the birth of the pup.....An occasional corpus luteum persists for two years."

Scheffer, Victor B. CRYPTORCHID FUR SEALS. American Midland Naturalist 46(3): 646-648, illus. Nov. 1951.
Behavior, body proportions, dentition, and pelage of 5 males with infantile testes. They differ markedly in all these respects from normal males. They do, however, return to the breeding grounds despite the presumed absence of sex drive.

BIRDS--GENERAL

Clark, Grahame. FOWLING IN PREHISTORIC EUROPE. Antiquity 22(87): 116-30, illus. 1948. [Copied from Polar Record 6(43).]
"Study of archaeological remains and present-day methods of hunting in the Arctic, to determine prey and methods of fowlers in prehistoric Europe and the Arctic."

Horstadius, Sven (editor). PROCEEDINGS OF THE XTH INTERNATIONAL ORNITHOLOGICAL CONGRESS, UPPSALA [SWEDEN] JUNE, 1950. Almqvist and Wiksell, Uppsala, or the editor at Zoologiska Institutionen, Uppsala. 662 p., illus. 1951. 35 Swedish crowns (= $6.75).
This volume contains the 83 papers on the program of the Xth International Ornithological Congress. Most are printed in extenso but a few are in abstract form. They are grouped under the general topics of Evolution and Systematics (17), Migration and Orientation (19), Behavior (7), Ecology (23), Regional Faunas (6), and Miscellaneous (9). Added to these are the Presidential Address on "Recent Additions to our Knowledge of Prehistoric Birds" by Dr. Alexander Wetmore and an "Introduction to Swedish Ornithology" by Professor Horstadius. All papers are in English except for 12 in German and 5 in French. Included also are complete lists of official delegates and members of the Congress; itineraries, participants, and lists of birds seen on the excursions; and results of the Round Table Conference on Bird Ringing under the co-chairmanship of Dr. A. Landsborough Thomson and the reviewer.--Frederick C. Lincoln.

Jespersen, P. ON CHANGES IN THE DISTRIBUTION OF TERRESTRIAL ANIMALS IN RELATION TO CLIMATIC CHANGES. Rapports et Procès-Verbaux des Réunions, Conseil Permanent International pour l'Exploration de la Mer 125: 36-39. 1949. [Copied from Polar Record 6(43).]
"Short account of increase in number of southern species in birds of Greenland, Iceland and Faroe Islands."

Low, Seth H. BIRD BANDING. U. S. Fish and Wildlife Service, Leaflet WL-235: 1-7. Revised Nov. 1951.
General explanation of the banding program; details about bands; how to become a cooperator.

BIRDS--GENERAL--Continued

Richards, Coombe. HIGH BIRDS AND LOW. Herbert Jenkins, London. 216 p., illus. 1950. (Distributed in America by Greenberg, 201 E. 57th St., N. Y. 22, N. Y.) [From review in "Outdoor News Bulletin" for Feb. 15, 1952.]
"American hunters will enjoy reading this English book because most of the methods described contrast so sharply with our own.....This book covers all phases of British bird hunting and is similar in coverage to a number of narratives that have appeared in America, which makes the contrast all the greater. As in America, it gives the impression that things are not what they used to be in field sports."

Wetmore, Alexander. A REVISED CLASSIFICATION FOR THE BIRDS OF THE WORLD. Smithsonian Miscellaneous Collections 117(4): 1-22. Nov. 1951.
A list of families and higher groups, with limited discussion of some of the author's decisions.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Bartholomew, George A., Jr. THE EFFECT OF LIGHT INTENSITY AND DAY LENGTH ON REPRODUCTION IN THE ENGLISH SPARROW. Bulletin of the Museum of Comparative Zoology 101(3): 433-477, illus. 1949. [Copied from Bird-Banding 23(1).]
Positive results were obtained, but they were stronger in the male than in the female. The author believes that the action of light is experimentally complicated by, but normally reinforces, the "internal rhythm" of the endocrine system.

Dircksen, Rolf. BIRD FOLK ON FAR JOURNEYS. The wonder of bird migration. (Vogelvolk auf weiter Reise. Das Wunder des Vogelzuges.) Bertelsmann, Gütersloh, Germany. 191 p., illus. 1951. 9.80 German marks. [Copied from Bird-Banding 23(1).]
According to Mrs. Nice's review cited above, this is a pleasing book containing much data on the results of European banding and the migration of European birds. Most of the book is devoted to "Life and migration pictures" of Central European species. A number of general chapters treat of speed and height of migration, return to breeding and birth place, and age as found by banding. Orientation and homing are discussed on the basis of recent experiments. There are 36 maps and 93 fine photographs.

Marshall, A. J. THE REFRACTORY PERIOD OF TESTIS RHYTHM IN BIRDS AND ITS POSSIBLE BEARING ON BREEDING AND MIGRATION. Wilson Bulletin 63(4): 238-261, illus. Dec. 1951.
An important technical paper based largely on cyclic changes in the testis. "The author believes that the internal gonad rhythm is the most important single factor in the timing of breeding seasons and the migration that is part of them .....No single over-all factor such as day-length or light-increment is responsible for the timing of avian breeding seasons. The breeding season is kept in step with the sun essentially by the external factors that permit nidification, ovulation and the survival of young on the habitual breeding ground. Of these, the most important may be a safe nesting site, mild weather, and an abundance of the food on which the young are traditionally fed."

Marshall, A. J., and C. J. F. Coombs. LIPOID CHANGES IN THE GONADS OF WILD BIRDS: THEIR POSSIBLE BEARING ON HORMONE PRODUCTION, SEXUAL DISPLAY AND THE BREEDING SEASON. Nature 169(4294): 261-264, illus. Feb. 16, 1952.
Experimental and observational evidence is given in support of the idea that breeding phenomena are governed primarily by gonadal changes and secondarily by environmental stimuli. "Any theory of avian breeding seasons based primarily on internal rhythm and secondarily on various environmental changes has the advantage of possible application to all seasonal species whether they breed in the spring, in the depth of winter (as does the Antarctic emperor penguin) or on the equator, where light fluctuations are too small to command consideration."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Matthews, G. V. T. THE SENSORY BASIS OF BIRD NAVIGATION. Journal of the Institute of Navigation 4(3): 260-275. 1951. [Copied from Bird-Banding 23(1).]
A critical review of recent theories.

Moreau, R. E. THE MIGRATION SYSTEM IN PERSPECTIVE. Proceedings of the Xth International Ornithological Congress, Uppsala: 245-248. June 1950.
The author concludes that it is correct to regard Palaearctic and Nearctic bird migration as representing, on the geological time scale, only a temporary stage of a system as old as well-developed flight. Pleistocene climatic fluctuations have done no more than determine details of the migrations.

Yeagley, Henry L. A PRELIMINARY STUDY OF A PHYSICAL BASIS OF BIRD NAVIGATION. Journal of Applied Physics 18(12): 1035-1063, illus. Dec. 1947.
This paper, results of which have been questioned, is the first technical work reporting experiments that seem to show that birds navigate by means of sensitivity to the effect of "motion through the vertical component of the earth's magnetic field and to the effort exerted to overcome the coriolis force, due to the earth's rotation." The 2 influences form a navigational gridwork.

Yeagley, Henry L. A PRELIMINARY STUDY OF A PHYSICAL BASIS OF BIRD NAVIGATION. Part II. Journal of Applied Physics 22(6): 746-760, illus. June 1951.
Reports further experiments that seem to support the Magnetic-Vertical-Coriolis theory. Some of the author's experiments, like those of other workers, indicate that birds living along extensive water margins are guided by landmarks and do not learn to navigate by more subtle means.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Brandt, Herbert. ARIZONA AND ITS BIRD LIFE: A NATURALIST'S ADVENTURES WITH THE NESTING BIRDS ON THE DESERTS, GRASSLANDS, FOOTHILLS, AND MOUNTAINS OF SOUTHEASTERN ARIZONA. The Bird Research Foundation, Cleveland, Ohio. xvi + 724 p., illus. 1951. $15.00. [Copied from Bulletin of the Massachusetts Audubon Society, 36(3).]
"The body of this book is a mine of information on the nesting habits of Arizona birds. But the book is more than that. It is a serious study of ecological conditions and of the distribution of birds in an area where elevation substitutes largely for latitude and where aridity and seasonal rainfall produce great variety.....The Appendix contains in 62 pages an annotated list of the 170 forms of nesting birds that the author found.....and three pages devoted to additional birds that might be found breeding there." Illustrated by many drawings, photographs, and 9 color plates.

Griscom, Ludlow. DISTRIBUTION AND ORIGIN OF THE BIRDS OF MEXICO. Bulletin of the Museum of Comparative Zoology 103(7): 339-382. June 1950. [Copied from Wilson Bulletin 63(4).]
The 1000 full species and 2200 forms of Mexican birds are grouped into 7 major groups and 15 sub-groups, each representing a different distributional pattern. The probable origins and distributional histories of these faunal assemblages are discussed at length, with much consideration of past and present ecological factors.

Kelley, Neil T., editor. BIRD SURVEY OF THE DETROIT REGION, 1950. Detroit Audubon Society. 1-67 p., map. Dec. 1951. 10¢.
Contains seasonal summaries, annotated check list, bird banding report, nesting summary, breeding bird census. Part of the material has previously appeared in Audubon Field Notes and The Jack-Pine Warbler.

Lack, David and Elizabeth. FURTHER CHANGES IN BIRD-LIFE CAUSED BY AFFORESTATION. Journal of Animal Ecology 20(2): 173-179, illus. Nov. 1951.
Traces qualitative and quantitative changes in the avifauna of British heathlands that have been planted to pines for varying lengths of time.

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Norris, Robert A. DISTRIBUTION AND POPULATIONS OF SUMMER BIRDS IN SOUTHWESTERN GEORGIA. University of Georgia Press, Athens. Georgia Ornithological Society, Occasional Publication no. 3: 1-67, illus. 1951.

Description of the 8-county area and its habitats; annotated list of species; discussion of distributional data; summer bird populations of 3 major habitats. The 3 habitats represented successional stages: old field, pineland, beech-magnolia hammock. Census results are given as birds per hundred acres. Pineland had more pairs (197) than old field (66), but hammock was far richer, with 746 pairs. The occurrence of northern faunal elements along streams of the region is discussed, and the ecology of certain habitats in the region is compared with that of similar habitats in other regions.

Phillips, Richard Stuart. THE BIRDS OF HANCOCK COUNTY, OHIO. Findlay College, Findlay, Ohio. 63 p. 1951. $1.50. [Copied from Nature Magazine 45(5).]

"This little local bird book discusses 188 species of birds that have been observed in Hancock County, 84 of which species are nesting species. This county lies within the Maumee Valley. The author supplies information that will enable bird enthusiasts to know when and where to look for either bird residents or migrants."

Salomonsen, Finn. GRØNLANDS FUGLE. THE BIRDS OF GREENLAND. Ejnar Munksgaard Forlag, Copenhagen. Vol. 2: 159-347 p., illus. 1951. Vol. 3: 349-608 p., illus. 1951. $9.00 per volume.

Volumes 2 and 3 of a 3 volume work. Volume 2 treats birds from ptarmigan to Arctic tern; volume 3, birds from razorbill to raven. The text, in both Danish and English, gives descriptions and treats taxonomy, distribution, economic status, habitat, and habits. It seems highly creditable and has been very favorably reviewed by ornithologists. The final volume contains table of contents and index for the set, and an annotated list giving the status of each species of bird recorded from Greenland. Many readers will have 4 criticisms of these volumes: 1. The price. 2. The overly large page size - 9 x 13 inches. 3. The announced intent to issue but 1 edition of 1850 copies. 4. The apparent crudity of the numerous full page, 6-color plates. The plates may represent modern art but they are not satisfactory as scientific illustrations.

Scott, Frederic R. THE BIRDS OF THE RICHMOND AREA. The Raven 22(9&10, 11&12): 45-62, 63-78. Sept.-Oct., Nov.-Dec., 1951.

An annotated list of 247 species and subspecies. It is introduced by a description of this central Virginia area and by a review of the ornithological work that has been done in it.--Neil Hotchkiss.

Shomon, Joseph J. BIRDLIFE OF VIRGINIA. Commission of Game and Inland Fisheries, Richmond. 1-88 p., illus. 1951. 25¢.

This booklet is a popular introduction to bird study. It does not pretend to be a field guide or a technical contribution to the knowledge of Virginia birds. It consists mainly of chapters on studying birds, value of birds, bird conservation, attracting birds, and the biology of birds. Game birds and 50 common birds of the state are briefly discussed, and the 401 species and subspecies known from Virginia are listed. Six color plates illustrate 124 species and there are many photographs.

Sutton, George Miksch. MEXICAN BIRDS. FIRST IMPRESSIONS BASED UPON AN ORNITHOLOGICAL EXPEDITION TO TAMAULIPAS, NUEVO LEON, AND COAHUILA. WITH AN APPENDIX BRIEFLY DESCRIBING ALL MEXICAN BIRDS. University of Oklahoma Press, Norman. ix + 282, illus. 1951. $10.00.

The first and greater part of this book is an entertaining narrative of experiences with birds in exotic settings. The 68-page appendix is an annotated list of all Mexican birds. For most forms that do not occur in the U. S., data are given on range, habitat, and appearance; for some forms there are long descriptions and notes on habits or probable taxonomic status. There are numerous drawings by the author, some in color.

BIRDS--NUMBERS AND NUMBER FLUCTUATIONS

Lack, David. POPULATION ECOLOGY IN BIRDS. A REVIEW. Proceedings of the Xth International Ornithological Congress, Uppsala: 409-448, illus. June 1950.
An important, thought-provoking paper on population dynamics. Lack analyzes recent work on population fluctuations, irruptions, cycles, and range changes. He then takes up the factors involved: reproduction, mortality, clutch size, limitation by food, and competition. Promising lines of study are suggested at several points. Avian and mammalian cycles may be linked through increased predation on birds after a rodent crash. Food supply appears to be a major factor in population phenomena, and it requires much more quantitative study.

Stewart, Robert E., editor. FIFTEENTH BREEDING-BIRD CENSUS. Audubon Field Notes 5(6): 313-330. Dec. 1951.
Reports population studies in 36 areas of various types.

BIRDS--MORTALITY FROM INSECTICIDES, WEATHER, ETC.

Dahlen, James H. THE EFFECT OF CERTAIN INSECTICIDES ON THE BOBWHITE QUAIL AND MOURNING DOVE. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Biloxi, Mississippi, October 21-24, 1951. 1-5 p.
Symptoms and acute toxicity levels of aldrin, dieldrin, toxaphene, and lindane as determined from artificially dosed, caged birds.

Klomp, H. OVER DE ACHTERUITGANG VAN DE KIEVIT, VANELLUS VANELLUS (L.), IN NEDERLAND EN GEGEVENS OVER HET LEGMECHANISME EN HET EIPRODUCTIEVERMOGEN. Ardea 39(1/3): 143-182, illus. 1951.
Has English summary. The lapwing has become scarcer in Holland, and it is often assumed that this is because its eggs are legally taken until April 20. The present paper tells of many experiments with the reproduction and renesting of this bird. It was found that the lapwing is a determinate layer (always 4 eggs) and that it will keep renesting until a brood is brought off. Its decline is attributed to "improvement of the grassland as a result of the regulation of the water-level and the administration of chemical manure," and not to egg removal or disturbance by mowing.

BIRDS--PARASITES AND DISEASES

Boyd, Elizabeth M. THE EXTERNAL PARASITES OF BIRDS: A REVIEW. Wilson Bulletin 63(4): 363-369. Dec. 1951.
A general discussion of the various groups, with notes on collecting methods, parasite ecology, incidence, effect on host, host specificity, and role in disease transmission. This paper, though brief, is detailed and well documented. It should serve as a good introduction to the study of avian ectoparasites.

Holland, George P. NOTES ON SOME BIRD FLEAS, WITH THE DESCRIPTION OF A NEW SPECIES OF CERATOPHYLLUS, AND A KEY TO THE BIRD FLEAS KNOWN FROM CANADA (SIPHONAPTERA: CERATOPHYLLIDAE). Canadian Entomologist 83(11): 281-289. Nov. 1951.

Miles, J. A. R., and J. B. Shrivastav. ORNITHOSIS IN CERTAIN SEA-BIRDS. Journal of Animal Ecology 20(2): 195-200. Nov. 1951.
A strain of this disease is reported from 2 species of gulls, and true psittacosis is reported from fulmars. The disease was being transmitted from fulmar to man in the Faroe Islands to such an extent that the taking of young fulmars was made illegal. It is believed that the infection in gulls is ancient, but that that in fulmars was acquired about 1930, by eating dead parrots thrown from ships.

BIRDS--WATERFOWL

Arthur, George. PRIVATE CLUBS OK FOR LUCKY FEW, BUT LEASING THEM FOR PUBLIC UTILITY WOULD INCREASE POOR MAN'S CHANCES 1000%! Outdoors in Illinois 17(1): 26-28, illus. Winter 1951.

Long established private duck clubs that practice habitat improvement have their advantages, but temporary clubs that lease large bottomland tracts from the Army Engineers on a year to year basis are undesirable monopolies. Plans call for turning more of these areas over to the state for management as public waterfowl shooting grounds.

Bellrose, Frank C. HELP NEEDED...WOOD DUCK HOUSING PROJECT. Illinois Wildlife 6(1). 2 p., illus. Dec. 1950.

Directions and plans for constructing and installing wood duck nest boxes that are designed to keep out squirrels and raccoons. They may be placed as much as ¼ mile from water. In good wood duck habitat, 2 boxes per acre may be used, but as few as 1 per 10 acres may serve in poor habitat. The boxes do not attract ducks to an area, but they do provide nest sites that are safer than natural ones.

Bergman, Gören. WATERFOWL PRESERVES ON THE FINNISH COAST (Naturskyddsområdena för sjöfågel vid Finlands kuster). Suomen Riista 5B: 170-190, illus. 1951 (1952).

With English summary. Location and function of present preserves and need of new ones in certain areas. Some areas are merely closed to shooting, others are actual nature preserves. Estimates are given of the populations of important seabirds in the preserves.

Chamberlain, E. B., Jr. STATUS OF WATERFOWL RESEARCH AND DEVELOPMENT IN THE SOUTHEASTERN STATES. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-10 p.

Report on a survey of what state and federal agencies are doing in these fields. About half the southeastern states have waterfowl projects. All of these projects are new, but some are already successful. Better coordination of information is needed. Waterfowl work receives only an average of 8.7% of the states' game management funds. In view of habitat shrinkage, and the success of present efforts, this work deserves expansion.

Crissey, Walter F. and others. WATERFOWL POPULATIONS AND BREEDING CONDITIONS - SUMMER 1951. U. S. Fish and Wildlife Service and Canadian Wildlife Service, Special Scientific Report, Wildlife no. 13: 1-240, illus. 1952?

This voluminous publication contains 43 separate reports, most of them dealing with different areas. The reports discuss sampling methods used, areas covered, weather and water conditions, breeding population trend, nesting success, and tables of data for individual areas. Much of the data is given by species. The various reports have summaries, but there is no general summary. Sampling methods are being improved and it is hoped that results will become more useful and more comparable year by year. They already provide a better basis for regulations than was available in the past.

East, Ben. WAVEYS OVER THE BAY. Beaver, A Magazine of the North 282, Sept. 1951: 10-13, illus.

Account of the great goose migrations at James Bay, Canada, and of the goose hunting techniques of the Cree Indians. About 800,000 geese, mostly blue and snow, funnel through a 50-mile belt of coastal marsh every spring and fall. After leaving there in the fall, many fly to the Gulf Coast without stopping. The Crees shoot them by the canoe load and pickle them for the winter. The goose hunting on the James Bay marshes is the best on the continent. Canadian regulations concerning it are being tightened and enforced.

BIRDS--WATERFOWL--Continued

Grenquist, Pekka. WATERFOWL PROTECTION ASSOCIATIONS IN THE ARCHIPELAGO (Skärgårdens sjöfågelskyddsföreningar). Suomen Riista 5B: 143-169, illus. 1951 (1952).

With English summary. Conservation and management of seabirds (chiefly ducks) in the Baltic waters of Finland, and the part the associations play in protection and harvesting. Fall hunting is not practical, so the traditional spring hunting is sanctioned, with females protected and males taken in reasonable numbers. Natural survival of males is better, and they return earlier in the spring. Regulations can be varied as necessary, and certain areas are closed to shooting. Nest boxes must be set out to aid reduced populations of goldeneye and goosander. Recent trends in populations of important species are reviewed.

Holmes, F. M. WATERFOWL CONSERVATION ON JAMES BAY. Royal Canadian Mounted Police Quarterly 16(4): 319-24, illus. 1951. [Copied from Polar Record 6(43).]

"Conditions of Migratory Birds Convention Act and Regulations; enforcement by R.C.M.P. for Dominion Wildlife Service in this area."

Jordan, James S. and Frank C. Bellrose. LEAD POISONING IN WILD WATERFOWL. Illinois Natural History Survey Division, Biological Notes no. 26: 1-27, illus. Dec. 1951.

A useful, semipopular review with considerable quantitative data. It is said to be a preliminary report, but many of the topics have been treated in technical articles. It takes up the effect of ingested shot, edibility of the poisoned birds, seasonal and geographic occurrence of poisoning, effect of various foods in modifying symptoms, individual tolerance, injurious component of shot (lead), tests of experimental shot (only iron good), and remedial measures. The later are: increase of small seeded or leafy, succulent food plants; dispersal from danger areas; and careful shooting to reduce crippling and incidence of shot in feeding areas.

Kiskimies, Jukka, and Eero Routamo. DYEING YOUNG WATERFOWL FOR RESEARCH PURPOSES (Vesilinnunpoikasten värjääminen tutkimuksia varten). Suomen Riista 6: 156-159, 194. 1951 (1952).

English summary: "The method proposed by Evans (1951) is described, together with experiences obtained in experiments in Finland in summer 1951. 54 young velvet scoters were dyed and a maximum additional egg mortality of 4% was observed. There was no noticeable difference in the behavior of dyed and undyed ducklings nor in the reaction of adult velvet scoters toward them."

Leporati, Lamberto. CONDIZIONI FAUNISTICO-VENATORIE DELL' ESTUARIO VENETO. Universita di Bologna, Italy, Ricerche di Zoologia Applicata alla Caccia 21: 1-61, illus. 1951.

Has English summary. Studies were made of the Venetian Lagoon to determine causes of decrease in some of the many species of birds using the area. Greatest decreases were in teal, mallard, shoveler and pintail. Mallard, teal, and summer teal were found to have simultaneous fluctuations in numbers, somewhat cyclically. The author concludes that physical conditions have changed but little in the lagoon, and that decreases are caused by man's activities, such as drainage, agriculture, overhunting, irrational systems of shooting, disturbance, increased human population, lack of maintenance of water control structures, etc.

Martin, A. C. and F. M. Uhler. FOOD OF GAME DUCKS IN THE UNITED STATES AND CANADA. U. S. Fish and Wildlife Service, Research Report 30: 1-308, illus. 1951. $0.75.

An excellent photographic reproduction (without revision) of the paper of the same title that appeared in 1939 as Technical Bulletin 634 of the U. S. Department of Agriculture. It takes up the value, habitat, identification, and distribution of a great many waterfowl food plants. There is also a long section on the propagation and care of these plants. Most of the 152 plates are devoted to the important plants and their habitats.

BIRDS--WATERFOWL--Continued

Scott, Peter. THE SWANS, GEESE AND DUCKS OF THE BRITISH ISLES. Severn Wildfowl Trust, Third Annual Report, 1949-1950. 121-130 p., illus. 1951.
Treats 18 forms, many of them American, with color drawings of each. This first issue includes only swans and geese. The text gives concise information on taxonomic status, breeding range and breeding habits, winter range, status in Britain, numbers in world (for some forms), food, habitat, voice, and identification.

Sirén, Mika. INCREASING THE GOLDENEYE POPULATION WITH NEST BOXES (Telkkäkannan lisääminen pesäpönttöjen avulla). Suomen Riista 6: 83-101, 189-190, illus. 1951 (1952).
With English summary. Nearly 100 nest boxes of various types were studied for 3 years at the Evo Wildlife Research Station in Finland. At the beginning no goldeneyes were present, but by 1951 at least 11 boxes were used. Specifications are given for the type of boxes found best and for their proper placement.

Wells, Robert A. DIVIDENDS IN DUCKS. PART II. THE PROGRAM FOR SMALL MARSHES. New York State Conservationist 6(3): 25-26, illus. Dec.-Jan. 1951-52.
Reviews background, benefits, costs, and plans of the N. Y. small marsh project. Mallards are being reared and released on marshes in the state; returns from 925 are discussed. In the future mallards will be released only on refuge marshes, so that they can build up a breeding stock for the state. Mallard stocking is expected to cease in about 4 years, and then other waterfowl, including geese and diving ducks, will be reared and stocked. For this plan to be most effective, many small marshes will be needed. A network of them is also needed in Southeastern Canada.

Wikström, Don. THE GOLDENEYE A MOST DELICIOUS GAME BIRD (Telkkä on maukkaimpia riistalintujamme). Suomen Riista 6: 162-164, 195. 1951 (1952).
English summary: "The writer gives detailed instructions for treating the goldeneye and preparing it for food in different ways. The article is intended to abolish the common prejudices about the game and food value of the goldeneye. This is important because populations of the goldeneye are very easily increased by active management..."

Wikström, D. ON THE HUNTING OF SEAFOWL IN THE NORTHERN COUNTRIES. (Om sjöfågeljakten i de nordiska länderna). Suomen Riista 5B: 60-83. 1951 (1952).
Has English summary. Discusses migration routes, kill, and hunting methods in Fennoscandia. Local variation in these factors are brought out. Spring hunting is traditional in many localities, with only adult males being shot. The practice seems to be approvable but its biological background needs investigation. Fall and winter shooting is also done and is approved as long as the kill is within reasonable limits. Winter shooting of concentrations at holes in the ice should be forbidden. "The most appropriate form of hunting in the spring is shooting with the aid of decoys, as it enables accurate identification of the individuals to be shot, wounding is rare, and the pairs that have already started nesting seldom come to the decoys.....Shooting on the wing is more destructive than the other forms of shooting in that it wounds a relatively large number of birds..."

BIRDS--QUAIL

Edmondson, C. D. RANCHERS AND FARMERS CAN RAISE QUAIL. Texas Game and Fish 10(1): 13. Dec. 1951.
Tells of the large number of quail (presumably bobwhite) on a big Texas ranch where the country was favorable, quail foods had been planted, supplementary feeding was done, predator control was practiced, and many brush shelters had been built. The shelters were being heavily used. In one day, 940 quail (47 coveys) were seen.

BIRDS--QUAIL--Continued

Gale, Larry R. DO REFUGES MEAN MORE QUAIL? Presented at the 5th Southeast Wildlife Conference, Edgewater Park, Mississippi, October 22-24, 1951. 1-8 p.
Seven Kentucky refuges and 6 check areas were studied for several years to determine effects of refuges on quail. Refuges were not improved or stocked. They seemed to give no benefit and had no higher preseason populations than did check areas. Author concludes that overshooting occurs only in marginal habitats. The state is abandoning merely protected areas for quail in favor of management-demonstration areas.

BIRDS--PHEASANTS

Delacour, Jean. THE PHEASANTS OF THE WORLD. Country Life Ltd., London; and Scribner's, N. Y. 347 p., illus. Oct. 1951. $35.00. [From review by A. H. Miller, Condor 54(1)]
"The present volume completes and brings up to date Beebe's Monograph. It has a two-fold purpose: to offer a summary of modern knowledge of systematics, life habits, and geographical distribution of the birds, and to supply the ever-growing numbers of Pheasant-lovers with necessary data concerning the birds in confinement." Apparently material already available in Beebe's work is summarized rather than duplicated. There are 32 plates, 16 in color, and distribution maps. The volume is of quarto size.

Erickson, A. B., D. B. Vesall, C. E. Carlson, and C. T. Rollings. MINNESOTA'S MOST IMPORTANT GAME BIRD - THE PHEASANT. FACTS AND FIGURES ON PHEASANT STUDIES 1939-1950. Flicker 23(3): 23-49, illus. Sept. 1951.
This is a long, valuable, semitechnical discussion of the biology and management of the pheasant in Minnesota. It contains much solid data, despite being simply written, and is well summarized. Topics include: nesting habits, causes of nest losses, food habits, sex and age ratios, age determination, effect of weather, predation, parasites and disease, effect of field burning and its ineffectiveness in controlling corn borer, report of feeding treated seed grain to pheasants, road kill, populations in regions of the state and reasons for them, management methods, banding results, and censusing. Some important limiting factors are burning, road kill, mowing, overgrazing, crippling by hunters, and blizzards.

Kozicky, Edward L. JUVENILE RING-NECKED PHEASANT MORTALITY AND COVER UTILIZATION IN IOWA, 1949. Iowa State College Journal of Science 26(1): 85-93. Oct. 1951.
Study of pheasant broods on Winnebago Pheasant Research Area. From author's summary: Statistical analyses of means from successful nests and broods at 3 weeks of age did not reveal a significant rate of mortality. A significant linear regression in brood sizes was found from 1 to 11 weeks of age. Mowing of hayfields accounted for the greatest observed loss of juvenile pheasants. Habitats in order of utilization were hayfields, pastures, uncultivated land, small grains, corn, and oil grains. Fields of corn and oil grains were not used extensively until after small grains were harvested. Cover of medium density was frequented more than light or dense cover. In August and September there were 3.9 young per female, and 80.3 per cent of the females were accompanied by young.

Nelson, Bernard. 1951 PHEASANT HARVEST. South Dakota Conservation Digest 18(12): 2-5, illus. Dec. 1951.
Hunting statistics and biological data from bag checks, South Dakota. Officials desire a heavier harvest but the public does not.

BIRDS--GROUSE, PARTRIDGE, ETC.

Hardy, Frederick C. RUFFED GROUSE STUDIES IN EASTERN KENTUCKY. Kentucky Division of Fish and Game, Frankfort. 26 p., illus. Nov. 1950.
This report covers the period April 1, 1949 to June 30, 1950. It involves censuses, nesting studies, brood studies, drumming studies, flush data, and hunting data on 3 areas.--Neil Hotchkiss.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Keener, John M. CAPERCAILLIE IN WISCONSIN. Wisconsin Conservation Bulletin 16(12): 8-10, illus. Dec. 1951.
31 capercaille and black grouse from Europe were released on one of the Apostle Islands of Wisconsin. None of them were seen after about 2 years, and the virgin stands of the island are now being logged off, decreasing the potential capercaille range. The project will be continued if possible, but it is difficult to get enough birds for proper stocking.

Kiskimies, Jukka. WHAT TAG RECOVERIES SHOW ABOUT THE HOME RANGE OF BLACKGAME AND CAPERCAILLIE (Mitä merkitsemistulokset osoittavat metsälintujemme asuinalueen laajuudesta). Suomen Riista 6: 155-156, 194. 1951 (1952).
With English summary. Of 6 wing-tagged blackgame, 2 were taken near the place of marking, and the rest at distances of 8-9, 10, 12, and 23 km. Of 5 capercaillie, 1 was recorded from the original locality, but the others had moved 10, 10, 16, and 23 km. It has been known that these birds occasionally move widely, but the recoveries reported here, "...seem to indicate that even under quite normal conditions the home range of these birds is remarkably wide."

Siivonen, Lauri. INTENSIVE MANAGEMENT OF FOREST GAME BIRDS (TETRAONIDAE) NEEDED IMMEDIATELY (Metsälintujemme voimaperäinen hoito on aloitettava viipymättä). Suomen Riista 6: 32-45, 196-197, illus. 1951 (1952).
With English summary. Grouse populations in Finland have been alarmingly low for over a decade, and at present are only a quarter of those during the peak year of the 1930's. One of the unfavorable factors has been regrowth of the cut-over and burned-over forests. Where once there was much interspersion there is now too much forest uniformity. Present forestry practices of clear-cutting and patch burning should help. The author also proposes 14 specific measures for benefitting blackgame, capercaillie, willow grouse, and hazel grouse.

Stenlund, Milton H., and Lester T. Magnus. THE SPRUCE HEN COMES BACK. Conservation Volunteer 14(84): 20-24, illus. Nov.-Dec. 1951.
A popular review of the history and habits of the spruce grouse in Minnesota. It includes quantitative data on habitat preferences. Once rare, the bird is coming back with legal protection and gradual recovery of conifer stands. Many are still shot for ruffed grouse.

BIRDS--DOVES AND PIGEONS

Glover, J. S. ULCERATIVE ENTERITIS IN PIGEONS. Canadian Journal of Comparative Medicine and Veterinary Science 15: 295-297. 1951.
So-called "Quail Disease" is reported from pigeons in Canada.--C. M. Herman.

Nelson, Dan, L. Foote, J. E. Keeler, H. Alexander, F. A. Winston, D. M. Russell, J. Newsom, H. Bobbs, Jr., D. G. Allison, H. B. Poole, and J. W. Hammond. STATISTICS AS A TOOL IN MEASURING DOVE INVENTORIES. Presented at the 5th annual meeting, Southeastern Association of Game and Fish Commissioners, Edgewater Park, Mississippi, October 21-24, 1951. 1-9 p., illus.
Various extensive census methods give statistically poor results, with call counts showing up best. May and June call counts are recommended for the breeding bird index. Random roadside counts, pooled by states, will have to be relied on for the productivity index, which is used in governing the harvest.

Saunders, Dorothy Chapman. TERRITORIAL SONGS OF THE WHITE-WINGED DOVE. Wilson Bulletin 63(4): 330-332. Dec. 1951.
Formal, musical transcriptions of 7 songs of the western race and 6 of the eastern.

Schorger, A. W. THE MIGRATION OF THE PASSENGER PIGEON IN WISCONSIN. Passenger Pigeon 13(4): 119-124. Winter 1951.
This installment gives localities and dates for fall migrations, 1843-1899.

BIRDS--NON-GAME

Amadon, Dean. THE HAWAIIAN HONEYCREEPERS (AVES, DREPANIIDAE). Bulletin of the American Museum of Natural History 95(4): 151-262, illus. Dec. 1950. $1.75. [Copied from Wilson Bulletin 63(4).]
Discusses structure, plumage, habits, ecology and relationships of this endemic family, but emphasis is on taxonomy and evolution.

Arvey, M. Dale. PHYLOGENY OF THE WAXWINGS AND ALLIED BIRDS. University of Kansas Publications, Museum of Natural History, 3(3): 473-530, illus. Oct. 1951.
Reviews the taxonomy, biology, and anatomy of all forms in the family, and on the basis of this evidence speculates on origin and evolution of the group. Silky flycatchers and palm-chats are included in the waxwing family.

Buss, Irven O. THE UPLAND PLOVER IN SOUTHWESTERN YUKON TERRITORY. Arctic 4(3): 204-213, illus. Dec. 1951.
Topics discussed include: feeding behavior of young, production and mortality, territory, home range and movements, departure from breeding ground, status in region.

Gallet, Etienne. THE FLAMINGOS OF THE CAMARGUE. Macmillan, 60 Fifth Ave., N. Y. 127 p., illus. 1951. $3.00. [Copied from Outdoor News Bulletin 6(10).]
The review mentioned above says in part, "This book tells of ... a detailed study of the flock which nests regularly on the Mediterranean coast of France and is written by the man who made the studies. The European birds nest in a salt desert and their food habits were particularly puzzling...The book is beautifully written and the photographs are superb."

Knudsen, George J. AN INTERESTING WISCONSIN ROOKERY. Passenger Pigeon 13(4): 119-124, illus. Winter 1951.
Account of large rookery of great blue heron and cormorant, with notes on number and behavior of young; also 8 banding returns.

Madsen, Holger, and Christian Vibe. DEN GRØNLANDSKE HAVØRN (HALIAËETUS ALBICILLA GROENLANDICUS BREHM) OG DENS FØDE. Dansk Ornithologisk Forenings Tidsskrift, 44 Aarg., Hefte 3: 140-47. 1950. [Copied from Polar Record 6(43).]
"Greenland Whitetailed Eagle and its food: analysis of food-remains at nine eyries. English summary."

Paludan, Knud. CONTRIBUTIONS TO THE BREEDING BIOLOGY OF LARUS ARGENTATUS AND LARUS FUSCUS. Ejnar Munksgaard, 6, Nörregad, Copenhagen. 142 p. 1951. 20 Danish kroner. [Copied from Bird-Banding 23(1).]
The above cited review by D. S. Farner states that this is an excellent monograph that contains a vast wealth and variety of information on population dynamics and many aspects of life history. It is based on intensive local study and analysis of banding returns.

Sibley, Charles G. SPECIES FORMATION IN THE RED-EYED TOWHEES OF MEXICO. University of California Publications in Zoology 50: 109-194, illus. 1950. $1.50. [Copied from Wilson Bulletin 63(4).]
A modern treatment of geographic variation and taxonomy, based upon field and laboratory studies.

REPTILES AND AMPHIBIANS

Brattstrom, Bayard H., and Richard C. Schwenkmeyer. NOTES ON THE NATURAL HISTORY OF THE WORM SNAKE, LEPTOTYPHLOPS HUMILIS. Herpetologica 7(4): 193-196, illus. Dec. 1951.
Food (termites, ants, and their eggs); parasites; correlation of captures with moonlight, temperature, and humidity; emission of musk.

REPTILES AND AMPHIBIANS--Continued

Hebard, William B. NOTES ON THE LIFE HISTORY OF THE PUGET SOUND GARTER SNAKE, THAMNOPHIS ORDINOIDES. Herpetologica 7(4): 177-179. Dec. 1951.
Time of mating, gestation period, fall mating, number of young (apparently not correlated with size of mother), possibility of 2-year reproductive cycle, and discussion of literature on this subject.

McConkey, Edwin H. A SYSTEMATIC STUDY OF THE NORTH AMERICAN LIZARDS OF THE GENUS OPHISAURUS. Master's thesis, University of Florida, 1951.
Recognizes 2 monotypic species and another species with 2 races: O. ventralis, O. compressus, O. a. attenuatus, and O. a. longicaudus ssp. nov. Ranges of the species overlap broadly. Knowledge of life history is summarized and ecological differences between species are described. Origins and relationships are discussed. A key, maps, and tables of variation are included.

Peters, James A. STUDIES ON THE LIZARD HOLBROOKIA TEXANA (TROSCHEL) WITH DESCRIPTIONS OF TWO NEW SUBSPECIES. University of Michigan Museum of Zoology, Occasional Papers no. 537: 1-20, illus. Dec. 1951.
Taxonomic revision with statistical treatment of variation, range map, and descriptions. Knowledge of life history and ecology is summarized.

Schmidt, Karl P. ANNOTATED BIBLIOGRAPHY OF MARINE ECOLOGICAL RELATIONS OF LIVING AMPHIBIANS. Marine Life, Occasional Papers 1(9): 43-46. Aug. 1951.
Cites and briefly discusses 16 papers that refer to the occurrence of amphibians in brackish or sea water. Some species apparently can stand (and even breed in) strongly saline water.

Schmidt, Karl P. ANNOTATED BIBLIOGRAPHY OF MARINE ECOLOGICAL RELATIONS OF LIVING REPTILES (EXCEPT TURTLES). Marine Life, Occasional Papers 1(9): 47-54. Aug. 1951.
24 papers are cited. Each is abstracted for its information on the natural history and ecology of reptiles that live in or beside the sea.

FISHES

Dymond, J. R. A LIST OF THE FRESHWATER FISHES OF CANADA EAST OF THE ROCKY MOUNTAINS, WITH KEYS. Royal Ontario Museum of Zoology, Miscellaneous Publication no. 1: 1-36. 1947. 75¢.
Gives range and habitat.--Neil Hotchkiss.

INVERTEBRATES

Crompton, John. THE LIFE OF THE SPIDER. Houghton Mifflin Co. 254 p., illus. 1951. $3.00. [Copied from review by E. A. Chapin, Atlantic Naturalist 7(3).]
Said to be an enjoyable, accurate book on the biology and life history of spiders.

Peterson, Alvah. LARVAE OF INSECTS, AN INTRODUCTION TO NEARCTIC SPECIES. PART II. COLEOPTERA, DIPTERA, NEUROPTERA, SIPHONAPTERA, MECOPTERA, TRICHOPTERA. Edwards Brothers, Ann Arbor, Mich. 1-416 p., illus. 1951.
This is the best over-all identification guide to the insect larvae of the Nearctic Region. It contains a review of the general structure of the larvae, and simplified, student-tested keys to families. These are supported by a glossary and a wealth of large, clear drawings of whole larvae as well as parts of representative species. Under each family there is a discussion of larval habits, and descriptions of diagnostic characters in addition to those in the keys. A host index provides helpful clues to identify unknowns. There are also cross-reference lists of family names as used by different authorities.--R. T. Mitchell.

INVERTEBRATES--Continued

Pilsbry, Henry A. LAND MOLLUSCA OF NORTH AMERICA (NORTH OF MEXICO). The Academy of Natural Sciences of Philadelphia, Monographs, no. 3. Vol. 1, pt. 1: xvii + 573, 1939. Vol. 1, pt. 2: 575-994, 1940. Vol. 2, pt. 1: 1-520, 1946. Vol. 2, pt. 2: xlvii + 521-1113, 1948. Illus.

This elaborately illustrated series of volumes on the land snails of North America, by the dean of American malacologists, will long be the standard reference in its field. Much new material is presented for the first time, but basically the series is a manual for identification, and for taxonomic and distributional studies.

Smith, Maxwell. EAST COAST MARINE SHELLS. DESCRIPTIONS OF SHORE MOLLUSKS TOGETHER WITH MANY LIVING BELOW TIDE MARK, FROM MAINE TO TEXAS INCLUSIVE, ESPECIALLY FLORIDA. 4TH EDITION. Edwards Brothers, Inc., Ann Arbor, Michigan. vii + 314 p., illus. 1951.

This identification manual contains no keys but may be more useful to the amateur than one that does. Identification is made by comparing specimens with photographs and descriptions. Geographic (and often depth) distribution is stated for each species. Glossary, index, and directions for collecting and identifying are included.

Wardle, R. A., and J. A. McLeod. THE ZOOLOGY OF TAPEWORMS. University of Minnesota Press. 780 p., illus. 1952. $12.50.

This is an extensive treatise on the tapeworms of the world. It discusses the probable origin of tapeworms, and summarizes what is known about their classification, structure, life histories and biology. Most of the volume is devoted to descriptions - and identification keys - for all known families and genera of tapeworms and a majority of the known species. The book will be widely used as a reference in future work involving taxonomy of tapeworms. In a work of this sort we cannot expect a great deal of information on the hosts involved, but the volume contains many records for host groups, such as rodents, and many worms are listed also for their specific hosts. The summarizations of life cycles will prove of much value. The book is well documented and contains a very extensive list of references. It is a volume that has been sorely needed by parasitologists and the authors are to be commended for a voluminous undertaking well done.--C. M. Herman.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Ahlgren, G. H., G. C. Klingman, and D. E. Wolf. PRINCIPLES OF WEED CONTROL. John Wiley & Sons, N. Y. vii + 368 p., illus. 1951. $5.50. [Copied from American Scientist 40(1).]

The above cited review by W. L. Slate states: "The authors have brought together in a well-organized textbook practically all the material presently available on the subject. This should serve also as a handbook for the many now active in weed control matter, for instance chemical corporations and agricultural extension workers. However, the field is very fluid. Because of competitive pressure in the chemical industry, many new materials and techniques will soon appear; but as of today this is the story. Descriptions of the principal weeds and of their habits are included. This adds to the usefulness of the book as a text which is concerned with 'control,' as the title indicates."

Gimingham, C. H. THE USE OF LIFE FORM AND GROWTH FORM IN THE ANALYSIS OF COMMUNITY STRUCTURE, AS ILLUSTRATED BY A COMPARISON OF TWO DUNE COMMUNITIES. Journal of Ecology 39(2): 396-406, illus. Dec. 1951.

Methods of describing and analyzing the physical structure of plant communities.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES--Continued

Sweet, R. D., editor, WEEDS. Journal of the Association of Regional Weed Control Conferences 1(1): 1-129, illus. Oct. 1951. 1(2): 130-226, illus. Jan. 1952. $4.00 per year. [Circulation: R. L. Lovvorn, Bureau of Plant Industry, Beltsville, Md.]

The control of undesired plants is an important phase of wildlife management, and many readers will be interested in this new quarterly journal WEEDS. The nature of the journal is illustrated by the following titles from the first 2 issues: Some environmental factors affecting the response of sweet corn to 2,4-D. The design and evaluation of a small-plot sprayer. Herbicides: a new tool for use in studying soil physical properties affecting crop growth. Plant hormone activity of substituted benzoic acids and related compounds. Comments on selective herbicides for kale and broccoli. Regulatory phase of weed control. Control of roadside weeds and brush. Determinations on the effect of several herbicides on soil microorganisms. Johnson grass control in sugarcane. Influence of different carriers upon the inhibitory properties of growth-regulatory sprays. Some factors influencing the herbicidal efficacy of isopropyl N phenyl carbamate. Fogging Ribes, white pine, and brush with 2,4-D by helicopter. An especially valuable feature of the journal is the classified bibliography of weed investigations that appears in each issue. It is prepared by the Division of Weed Investigation of the U. S. Department of Agriculture, and is on a world basis. These reference lists cover 52 pages of no. 1 and 31 pages of no. 2, with about 30 references per page.

Whyte, R. O. and J. W. B. Sisam. THE ESTABLISHMENT OF VEGETATION ON INDUSTRIAL WASTE LAND. Commonwealth Bureau of Pastures and Field Crops, Aberystwyth, Wales, and Commonwealth Forestry Bureau, Oxford, England. Commonwealth Agric. Bureau Joint Publ. no. 14. xiii + 78. 1949. 10 s. [Copied from Geographical Review 42(1).]

A compilation dealing primarily with rehabilitation of strip-mined land and similar areas in the U. S. Middle West and the English Midlands, although other parts of the world are mentioned. Basic factors and selection of plants are considered in detail.

VEGETATION--FLORAS AND COMMUNITIES

Abrams, LeRoy. ILLUSTRATED FLORA OF THE PACIFIC STATES: WASHINGTON, OREGON, AND CALIFORNIA. VOL. III. GERANIACEAE TO SCROPHULARIACEAE, GERANIUMS TO FIGWORTS. Stanford University Press, Stanford, Calif. 866 p., illus. 1951. $17.50.

This is the third volume of a projected 4-volume flora. It keys, describes, and illustrates with drawings all species known from these states.--Neil Hotchkiss.

Harrington, H. D. and L. W. Durrell. COLORADO FERNS AND FERN ALLIES, PTERIDOPHYTA. Colorado Agricultural Research Foundation, Colorado Agricultural and Mechanical College, Fort Collins, Colo. 96 p., illus. 1950.

Lists 63 kinds. Has keys, descriptions, ranges, and large clear drawings.--Neil Hotchkiss.

Hultén, Eric. FLORA OF ALASKA AND YUKON. PART X. Lunds Universitets Årsskrift N. F. Avd. 2. Bd 46. 1483-1902 p., illus. 1950. $3.50.

This final part describes the composites and shows their ranges on nearly 200 small maps. An 80-page supplement contains the additions and corrections that have accumulated in the 10 years since the first part was published. A 38-page bibliography and a general index completes the flora.--Neil Hotchkiss.

Kearney, Thomas H. and Robert H. Peebles. ARIZONA FLORA. University of California Press, Berkeley. 1032 p., illus. 1951. $7.50.

A new work, replacing the authors' "Flowering Plants and Ferns of Arizona" (see Wildlife Review No. 35, page 67).--Neil Hotchkiss.

VEGETATION--FLORAS AND COMMUNITIES--Continued

Little, Elbert L., Jr. KEY TO SOUTHWESTERN TREES. U. S. Forest Service, Southwestern Forest and Range Experiment Station, Research Report no. 8: 1-28. Sept. 1951.

"This key to the native trees of New Mexico and Arizona (132 species with 3 additional naturalized species) is a supplement to the nontechnical illustrated handbook, Southwestern Trees. Its primary purpose is to provide foresters, botanists, students, and others with a precise, ready, nontechnical means of identifying trees and tree specimens throughout the year, including seasons when flowers and leaves are lacking. However, many native trees can be named easily by reference to the drawings, descriptions, distribution notes, and common names in the handbook." [The handbook referred to is by the same author, and covers same area. It was published by the U. S. Department of Agriculture as Agriculture Handbook no. 9, 109 p., illus., 1950. It is for sale by the Superintendent of Documents for 30¢.]

McDougall, W. B. and Omer E. Sperry. PLANTS OF BIG BEND NATIONAL PARK. U. S. National Park Service. 209 p., illus. 1951. $1.00.

This book keys and describes the flowering plants and ferns of this western Texas area. It contains many photographs; some of plants as they grow, some of specimens taken against a plain background. A considerable number help in identifying the plants.--Neil Hotchkiss.

McVaugh, Rogers and Joseph H. Pyron. FERNS OF GEORGIA. University of Georgia Press, Athens. xvii + 195 p., illus. 1951. $5.00. [Copied from Castanea 17(1).]

A review by Edgar T. Wherry emphasizes this book's excellent organization and illustrations.

Muller, Cornelius H. THE OAKS OF TEXAS. Contributions from the Texas Research Foundation 1(3): 21-323, illus. 1951. $5.50.

Key and detailed references, synonymy, descriptions, and ranges of 38 species; many photographs of herbarium specimens.--Neil Hotchkiss.

VEGETATION--FOREST

Baker, Harold L. and Adon Poli. AREA AND OWNERSHIP OF FOREST LAND IN MENDOCINO COUNTY, CALIFORNIA. U. S. Forest Service, California Forest and Range Experiment Station, Forest Survey Release no. 10: 1-23, illus. Oct. 1951.

Includes figures on extent of different forest types, and full page colored map showing age and type of all forest land in the county.

Beilmann, August P. and Louis G. Brenner. THE CHANGING FOREST FLORA OF THE OZARKS. Annals of the Missouri Botanical Garden 38(3): 283-291, illus. Sept. 1951.

The authors observed the succession of forest trees on a 650-acre area in Franklin Co., Missouri during a recent 10-year period. Rocks, soils, and man influenced the succession. Red oak, white oak, and white hickory have rapidly invaded black jack oak-post oak and white oak-sugar maple associations.--Neil Hotchkiss.

Beilmann, August P. and Louis G. Brenner. THE RECENT INTRUSION OF FORESTS IN THE OZARKS. Annals of the Missouri Botanical Garden 38(3): 261-282. Sept. 1951.

Many writings, dating from those of the earliest travelers, show that grass was predominant in the Missouri Ozarks until 150 years ago. Red cedar has been a most aggressive invader of grassland. Its spread has coincided with a period of reduced burning and apparently a milder and wetter climate. No forest climax has developed. Peak of lumber production was reached in 1900. Recently soil erosion has become important. In the early days there was heavy seed production and a tremendous quantity of game mammals and birds.--Neil Hotchkiss.

VEGETATION--FOREST--Continued

Bond, W. E. and Robert S. Campbell. PLANTED PINES AND CATTLE GRAZING - A PROFITABLE USE OF SOUTHWEST LOUISIANA'S CUT-OVER PINE LAND. Louisiana Forestry Commission, Bulletin no. 4: 1-28, illus. 1951.
This attractive bulletin, prepared by the U. S. Forest Service, tells simply, but in detail, how to manage cut-over, (and now free-ranged) lands for maximum profit from both timber and cattle. The improvement in timber and grazing conditions, and control of fire and free-ranging livestock, should benefit certain forms of wildlife as well as the landowners. The wildlife aspects, however, are not discussed.

Cypert, Eugene. SUGGESTIONS FOR THE MANAGEMENT OF OAK FORESTS FOR MAST PRODUCTION. Presented at the Southeastern Association of Game and Fish Commissioners Conference, Edgewater Park, Mississippi, October 23, 1951. 1-7 p.
Vigorous, fast growing oaks (except young ones) produce the most acorns. In management, many large vigorous oaks should be left uncut; thinning should allow nearly full crown development and rapid growth; cutting cycles should be short to avoid drastic canopy opening and brush growth. Such practices are not uneconomical, for increase in bole diameter is profitable.

Hustich, Ilmari. NOTES ON THE FORESTS OF THE EAST COAST OF HUDSON BAY AND JAMES BAY. Acta Geographica 11: 1-83, illus. 1950. [Copied from Geographical Review 42(1).]
Contains information on species composition, detailed descriptions of 45 sample plots, and data from tree-ring analysis.

James, Lee M. MISSISSIPPI'S FOREST RESOURCES AND INDUSTRIES. U. S. Forest Service, Forest Resource Report no. 4: 1-92, illus. 1951. 50¢.
Describes the state, its forest resources, their present status, their management and utilization. Includes detailed statistical tables.

Kurazhskovskiy, Yu. N. PHENOMENA OF "PASTORAL DIGRESSION" OF VEGETATION IN THE CONDITIONS OF THE NORTHERN TAYGA SUB-ZONE (Yavleniya pastoral'noy digressii rastitel'nosti v usloviyakh podzony severnoy taygi). Priroda [Nature] (Leningrad), no. 4: 67. 1951. [Copied from Polar Record 6(43).]
"Effects of intensive grazing on pastures in northern tayga areas of U.S.S.R."

Scholz, Harold F. THE CASE AGAINST COWS. Wisconsin Conservation Bulletin 16(12): 3-5, illus. Dec. 1951.
Facts and figures about the way grazing ruins woodlots for both timber reproduction and game. Soil and watershed values are also lowered. Livestock obtain little forage in woods and it is not economical to graze them there.

Steinbrenner, E. C. EFFECT OF GRAZING ON FLORISTIC COMPOSITION AND SOIL PROPERTIES OF FARM WOODLANDS IN SOUTHERN WISCONSIN. Journal of Forestry 49(12): 906-910, illus. Dec. 1951.
Compares sample pairs of woodlands as to composition of vegetative ground cover, soil moisture, soil porosity, and soil chemistry.

Tarrant, Robert F., Leo A. Isaac, and Robert F. Chandler, Jr. OBSERVATIONS ON LITTER FALL AND FOLIAGE NUTRIENT CONTENT OF SOME PACIFIC NORTHWEST TREE SPECIES. Journal of Forestry 49(12): 914-915. Dec. 1951.
Litter production, mineral content of foliage, and effect on soil of 10 species of trees. "The findings emphasize the soil-building value of western redcedar and red alder in western forests and should be of use in the control of species composition in reforestation programs."

VEGETATION--PASTURE AND RANGE

Etter, Alfred Gordon. HOW KENTUCKY BLUEGRASS GROWS. Annals of the Missouri Botanical Garden 38(3): 293-375, illus. Sept. 1951.
A readable account of a 3-year study in Missouri. Emphasis is on the morphology and growth of the individual plant and how it varies with season and environment.--Neil Hotchkiss.

Watson, Stephen J. GRASSLAND AND GRASSLAND PRODUCTS. Edward Arnold and Co., London. vii + 200 p., illus. 1951. 21s. net. [Copied from Nature, Dec. 15, 1951.]
According to the review cited above, this book gives much information on the management and utilization of pastures, particularly on decline of nutrients with growth and storage of the foliage. Modern methods of rotational grazing are fully discussed.

VEGETATION--WET-LAND

Baldwin, William P. and Edwin W. Ball. THE VALUE OF HERBICIDES IN SOUTHEASTERN AQUATIC HABITAT MANAGEMENT. Presented at the Southeastern Association of Game and Fish Commissioners Conference, Edgewater Park, Mississippi, October 23, 1951. 1-19 p.
The authors report on experimental control of many forms of pest plants with several herbicides, chiefly 2,4-D. Both air and ground application were used. Much factual detail on specific tests is given and tables of costs are included. The final section is a series of very practical "Principles of Aquatic Plant Control."

Fellows, Nathan W., Jr. RESULTS OF A WATERFOWL FOOD PLANTING SURVIVAL STUDY IN MAINE. Department of Inland Fisheries and Game, Augusta, Game Division Bulletin no. 1: 1-23, illus. Aug. 1951.
Between 1939 and 1943 there were 1,231 plantings of 16 species of aquatic plants made in various parts of Maine. The sites, plants, and methods were selected by wildlife biologists on the basis of the best available ecological information, but success was extremely poor. Both commercial and local wild stock was used. Much of it was held over winter in enclosures with circulating water. Collecting and planting methods are described. When the plantings were inspected in 1948, 2.4% had done well, 7.4% had somewhat fewer plants than had been planted, and 91.2% were essentially failures. Several plantings of wild rice and celery spread beyond all expectations. Some plantings were destroyed by drying, flooding, or grazing. Dark or very acid waters were also handicaps, but often the causes of failures could not be determined.

Segadas-Vianna, Fernando. A PHYTOSOCIOLOGICAL AND ECOLOGICAL STUDY OF CATTAIL STANDS IN OAKLAND COUNTY, MICHIGAN. Journal of Ecology 39(2): 316-329. Dec. 1951.
A study of the vegetation and physical factors of 52 stands. Plant composition, soils, and other conditions varied widely from stand to stand. The only necessary condition was the presence of high amounts of water, at least during the spring. "The reason why we find a certain type of stand in certain places seems to me a matter of chance related, it is obvious, to the immediately available flora.....As a conclusion it can be said that the individualistic concept of plant association is not only valid from the floristic point of view, but also from the ecological point of view." The abstract reality of plant associations is denied.

LAND, SOILS, WATER, AND CLIMATE

Baumhoff, Richard G. THE DAMMED MISSOURI VALLEY. Alfred A. Knopf, N. Y. 22, N. Y. xvii + 291 p., illus. $3.75. 1951.
According to a review in "Outdoor News Bulletin" (Feb. 15, 1952) this analysis of development plans is based on first hand experience and study of a great number of official reports. "...the writing is readable and the material well-organized; the research is accurate; and the treatment is thorough.

LAND, SOILS, WATER, AND CLIMATE--Continued

Beginning with a brief narrative trip down the river from its source to its mouth, he launches into a thorough discussion of the various resources, the problems of flood and drought, the philosophy and culture of the people, and the mind-staggering proposals of Pick-Sloan, MVA, and the President's Water Resources Policy Commission. Each is reported factually and without bias..."

Hawkes, Jacquetta. A LAND. The Cresset Press, London, and Random House, N. Y. 248 p., illus. 1951 (London), 1952 (N.Y.). [Copied from American Scientist 41(2).]
The review by G. E. Hutchinson states that this book is an important treatment of human ecology and its philosophy. It deals with the history of Britain from the formation of the earth to the present day.

Rustich, Ilmari. TRÄDENS TILLVÄXT I SÖDER OCH NORR I RELATION TILL DEN SENASTE KLIMATFLUKTUATIONEN. Terra, Årg. 60, no. 2: 73-80, illus. 1948. [Copied from Polar Record 6(43).]
"Prompted by recent theories of the latest climatic fluctuation the author compares tree-growth trends in Lapland and Oregon and concludes that it is misleading to compare growth curves or dendrochronological dates from different regions; English summary."

Polunin, Nicholas. THE REAL ARCTIC: SUGGESTIONS FOR ITS DELIMITATION, SUBDIVISION AND CHARACTERIZATION. Journal of Ecology 39(2): 308-315, illus. Dec. 1951.

Porsild, Alf Erling. THE CHANGING CLIMATE OF THE ARCTIC. Arctic Circular 2(1): 3-5. 1949. [Copied from Polar Record 6(43).]
"Observations on increase in mean winter temperatures in the last 30 years."

Porter, H. C. and others. SOIL SURVEY OF SCOTT COUNTY, VIRGINIA. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. 166 p. Dec. 1951. $3.00.
Physiography, climate, water supply, native vegetation, history, industries, transportation, cultural development, agriculture, detailed description of soils (with soil map), soil management, water control on the land.--Neil Hotchkiss.

Russell, E. John. SOIL CONDITIONS AND PLANT GROWTH. Eighth edition. Longmans, Green and Co., N. Y. 635 p., illus. 1950. $6.50.
This book presents "...an up-to-date account of our knowledge of the soil as a medium for plant growth." Among the subjects it discusses are the nutrients needed by plants, composition of the soil, soil organisms and their ecology, soil organic matter, soil physics and chemistry, soil formation, soil management, plant growth, and the effect of growing plants on the soil.--Neil Hotchkiss.

Weiss, Marvin D. INDUSTRIAL WATER POLLUTION -- SURVEY OF LEGISLATION AND REGULATIONS. Chemonomics, Inc. (400 Madison Ave., N. Y. 7, N. Y.) iv + 142 p. 1951. $5.00. [Copied from Journal of the Association of Official Agricultural Chemists 35(1).]
According to the review cited, the subject matter is broader than the title indicates. The appendix includes standards for water classification, standards for sewage treatment, and lists of pollution control agencies.

Zon, Raphael. THE HYDROLOGIC AND CLIMATIC INFLUENCE OF THE FOREST IS BASIC TO THE CONCEPT OF FORESTRY. Journal of Forestry 49(12): 881-883. Dec. 1951.
Stresses the need for watershed management along forestry lines and discusses the history of this movement, especially in the U. S.

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INT.-DUP. SEC., WASH., D.C. 24109